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Topic:

Effect of Procurement Lead Time on Healthcare Delivery at the Koforidua Regional Hospital

By

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DECLARATION

I declare that except for the references and interviews, which have been duly acknowledged by me, this thesis is the result of my own research carried out under the supervision of Dr. Emmanuel Adinyira and has never been presented neither in whole nor in part for the award of a degree.

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DEDICATION

I dedicate this dissertation to God and my family. A special feeling of gratitude to my loving wife Edna and my wonderful sons Jason, Jude, Joel and Joshua for being there for me throughout the entire Masters programme.

I also dedicate this dissertation to my many friends who have supported me throughout the process .I will always appreciate all they have done, especially Francis Yevugah, Zebaot Doe and Frank Ademan whose words of encouragement and push for tenacity ring in my ears .

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Finally, I bear responsibility for all weaknesses, which the reader may find in this study.

ABSTRACT

This has been a study to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. This study used the purposive sampling technique to select the respondents. Questionnaire was used to collect data from sixty key and relevant personnel of the hospital. This study found that the main source of medical supply at the hospital is the central medical stores of MOH even though the hospital relies on other sources such as vendors and selected local/foreign manufacturing companies. It was also found that the number of inventory turns per year at the hospital was over 10 times and that the average procurement lead time for drugs and laboratory supplies at the hospital is within four (4) weeks. In relation to the second objective of the study, it was found that the factors affecting average procurement lead time are effective need identification leading to prompt reordering of medical and laboratory supplies; adequate and timely release of funds to the procurement unit; adequate knowledge of Ghana's Procurement Act; motivating staff and seeking top management support and effective supplier selection. It was additionally found that the procurement lead time has a positive impact on the performance of the hospital's staff as well as the overall performance of the hospital. Based on the findings of this study, recommendations made were that the hospital should have a service level agreement with its vendors and suppliers spelling out into details what are expected of them in terms of performance and that efforts ought to be made to guarantee that suppliers are mindful of the hospital's needs and lead-time plan for medical and laboratory supplies are requested or ordered in great time to evade pointless interruptions, holdups and patient dissatisfactions. It is further advised that the management of the Koforidua Regional Hospital should share information since sharing can noticeably reduce inefficiencies in a supply chain, and therefore, can become a key factor for the hospital to achieve its benefits.

It is finally advised that the central medical stores should be able to use innovative procurement models like framework agreements to ensure uninterrupted availability of health commodities at the central warehouse.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BSc	Bachelor of Science
CEO	Chief Executive Officer
CMS	Central Medical Stores
CSCMP	Council of Supply Chain Management Professionals
DLT	Delivery Lead Time
ERP	Enterprise Resource Planning
ESL	External Services Level
GDP	Gross Domestic Product
GNDP	Ghana National Development Program
HIV	Human Immunodeficiency Virus
HND	Higher National Diploma
HR	Human Resource
ICT	Information Communication Technology
JIT	Just – In - Time
ISL	Internal Service Level
MBA	Master of Business Administration

MDGs	Millennium Development Goals
MIS	Management Information Systems
MLT	Manufacturing Lead Time
MO	Manufacturing Order
MOH	Ministry of Health
MSc	Master of Science
OF	Order Fulfilment
OHLT	Order Handling Lead Time
PHC	Primary Health Care
PO	Purchase Order
PSM	Purchasing and Supply Management
RT	Real - Time
SC	Supply Chain
SSE	Senior Secondary Education
SLA	Service Level Agreement
SCM	Supply Chain Management
SLT	Standard Lead Time

TP	Time Pressure
WHO	World Health Organisation
RII	Relative Importance Index
SPSS	Statistical Package for Social Science

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

According to the World Health Organization (WHO, 2007), the incessant call for intensification into effective delivery of healthcare is regarded as a means through which the Millennium Development Goals (MDGs) can be realized. The MDGs includes a reduction of child mortality, maternal mortality and challenge of HIV/AIDS, tuberculosis and Malaria. According to Kelley and Hurst (2006), providing service or delivering healthcare service is seen as a direct output of the inputs into the health system which entails health sector employees, purchasing or procurement, supplies and financial activities. Again and as pointed out by Kelley and Hurst (2006) and Matke et al., (2006), healthcare can be said to be of high quality when key indicators such as increased accessibility, higher utilization, availability as and when needed and extensive coverage is assured to all who need healthcare services. This is where the value of the procurement function comes into play since without an effective procurement function, access or utilization or coverage will come naught. Of what use is utilization or access or coverage when essential drugs and laboratory supplies are not available?

This means that access to quality healthcare should be broadly seen as encapsulating a methodological evaluation of physical, financial and socio-psychological access to healthcare services (Matke et al., 2006). This means that health service providers have to look at quality healthcare from a broad perspective and the procurement function which completes the healthcare process should be given a prominent role and supported with the right personnel, right technology and motivation to ensure that essential medicines and laboratory supplies are available all year round (WHO, 2007; Matke et al., 2006).

It is against the foregoing that this study is being undertaken to determine how the procurement function affects healthcare delivery in the country. This study is carried out again within the backdrop of the Public Procurement Act, 2003, (Act 663), which encourages competiveness among public procurers, transparency, as well as value for money.

1.2 Background of the study

Considering that the healthcare delivery is highly dependent on how fast and efficient care givers are able to attend to patients and provide them with vital drugs and other associated medical needs, the requirement for short lead times are vital to the realization of quality health care delivery (Olinder and Olhager, 2008). This means that hospitals and other firms must put in significant efforts to reduce lead times (Gaither, 2004). According to Gaither (2004), the main focus of today's business organizations are customers and to satisfy customers requires shorter lead times. According to Olinder and Olhager (2008), firms that concentrate on cycle time as a measure of productivity all things being equal are able to reduce delivery time and by so doing, improving quality and ultimately, creating a satisfied customer.

The procurement and supply management function plays a vital role in healthcare delivery and this means that failure by the function to protect the availability of essential medical supplies such as drugs and other laboratory supplies can adversely affect quality health care delivery (Kumar et al., 2008). The challenge in managing inventory is to ensure the existence of a balance between the supply of inventory (vital and essential drugs and laboratory supplies) with demand (Coyle et al., 2003). This is because healthcare institutions would preferably want to have enough inventories to satisfy the demands of its patients and not loose patients to other health facilities due to inventory stock outs. On the other hand, health care facilities do not want to have too much

inventory staying on hand because of the cost of carrying unnecessary inventory (Coyle et al., 2003). This implies that enough but not too much inventory is the final objective of health care facilities (Coyle et al., 2003). Hence the need to have an efficient procurement lead time (Lee, 2000).

Lead time can be defined variedly depending on the part of firm that is focused on (Harland et al., 2007). Lead time starts right from the onset of receiving an order from a customer to the time when the customer receives the product or service asked for. Harland et al., (2007) defines lead time as being the time required to receive delivery and the time between receipt and payment while Silver et al., (2008) defines procurement lead time as the time that passes by between making the order and when the order is received into inventory. Based on the foregoing, the researcher defines procurement lead time as the time that goes by right from the moment when a firm places an order for goods/products up till the time that the required products are received.

This means that procurement lead time is highly critical to the realization of firms objectives whether they are in the manufacturing or healthcare sector. This is because the capacity and ability to deliver swiftly affects customer satisfaction, profitability, loyalty, sales and general performance of firms. This again means that all efforts must be put in place by firms to ensure that there is enough lead time between ordering the product and placing the order in order to forestall issues of stock outs. As pointed out by Lee (2000), firms must guard against high lead time variability – which is when the duration between the ordering period and the delivery varies from the expected time.

According to Coyle et al., (2003), despite the establishment of re-order levels, the quantities of vital and essential drugs and laboratory supplies are largely determined by past usage and therefore

meaning that there is usually no specific policy to help the determination of the quantities to be ordered. This again means that orders for medical and laboratory supplies are placed based on the employee's familiarity with the procurement process. Again, incorrect quantities ordered sometimes can lead to unexpected situations of stock out and overstocking. Shortage of medical and laboratory supplies are occasionally attributed to the existence of long and bureaucratic procurement procedures, occasional shortages of vital drugs, lack of sufficient funds with which to purchase new medical supplies, unwillingness of suppliers to supply healthcare facilities due to delayed payments, delay in ordering for drugs, inadequately trained and skilful employees of the procurement departments and the general inadequacies of hospitals' inventory management systems.

According to Coyle et al., (2003), bottlenecks and challenges of procurement are likely to come about when firms are not able to track their inventories effectively, inefficiency and additional costs mount. Moreover, medical and laboratory supplies get lost, supervisors fail to check inventory deficiency, inability to find vital service equipment, disparities between billings and supplies etc. All of these bottlenecks lead eventually to inefficiencies and additional costs as well as poor health care delivery. Against this backdrop, it was deemed timely and opportune to determine the effects of procurement lead time on the Koforidua Regional Hospital where procurement lead time continues to be a challenge in facilitating the delivery of quality health care. Like other hospitals in the country, the Koforidua Regional Hospital gets its medical and laboratory supplies from the Central Medical Stores (CMS).The CMS is a unit of the Procurement and Supply Directorate of the Ministry of Health (MOH) and it is has the sole responsibility of receipt, storage and distribution of all commodities procured by the MOH. In this instance, the Koforidua Regional Hospital gets its medical supplies from CMS through what is

termed the “pull” or “demand” system. This means that the procurement staff at the regional hospital must be efficient in ensuring that essential drugs are procured on time to forestall disasters at the hospital. Unfortunately, herein lies the problem – since the hospital is prone to periodic stock outs much to the detriment of patients.

1.3 Statement of the Problem

Drugs and laboratory supplies are central to quality healthcare provision and cut across all aspects of effective and efficient health care practices (GNDP, 2004b). Unfortunately and especially in developing countries, it is not uncommon to hear of shortages of drugs and laboratory supplies and this is a major concern of most healthcare providers (Jitta et al., 2003). The healthcare system in Ghana faces a number of challenges that make it difficult for its supply chain to operate efficiently and effectively (Verhage et al., 2002). Verhage et al., (2002) reported that there are several challenges associated with the Ministry of health’s procurement processes that must urgently be addressed. Infact the authors found that the Ministry of health’s procurement processes is replete with major issues such as inadequate procurement planning and management, lack of qualified procurement staff, poor procurement organization, poor stock management and lack of available funds and high prices.

A number of studies have been conducted on the effects of lead time on effective delivery of quality healthcare delivery. For example Chopra et al. (2004) found that firms that have cycle service levels of 50% or above, reorder point and safety stock can be reduced drastically when firms are able to reduce the variability of their lead time. Again, Rad (2008) in his study found that when firms are able to identify and are able to get rid of inefficiencies in their procurement systems, it becomes much easier to concentrate on activities that will make the management of the

procurement lead time efficient and by so doing reducing costs and stock outs. Furthermore, Nordas et al., (2006) concluded that logistics management is an essential ingredient and it helps firms to make their lead time management highly efficient. In another study by Rad (2008) on lead time reduction, efficient logistics system was established as a major factor. Moreover, Nachtmann and Pohl (2009) also conducted a study on the state of healthcare logistics. The study established that most healthcare supply chains are immature and are at their infancy. The authors suggested that firms especially those directly responsible for supply and procurement should pay more attention improving all area of the procurement function in order to reduce lead time variability.

From the above studies, it is clear that there have been several researches conducted on lead time and procurement management. However, most of the studies focus on other countries. In Ghana there is no study that has been conducted on the impact of procurement lead time on health care delivery management in public healthcare in Ghana. This is the gap that the study seeks to address. The study examined the following questions; what are the procurement factors that impact on lead time in the Koforidua Regional Hospital? How does the procurement function impact on lead time within the Koforidua Regional Hospital? What are the bottlenecks that impede the reduction of procurement lead time at the hospital? What are the possible solutions that can enhance the procurement of essential medical and laboratory supplies within time? The

4.1 Aim of the Study

This study's main objective was to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital.

1.4.1 Specific Objectives:

The specific objectives of this study were:

1. To determine the average procurement lead time for all procurement methods employed by the hospital
2. To find out the factors that affect average procurement lead time
3. To determine the effect of procurement lead time on product availability
4. To determine the effect of procurement lead time on staff performance
5. To suggest ways to improve the procurement lead time

1.5 Research Questions

To realize the above stated objectives, the following questions were posed:

1. What is the average procurement lead time for the Hospital?
2. What are the factors that affect average procurement lead time at the Hospital?
3. How does procurement lead time impact on product availability at the Hospital?
4. How does the procurement lead time impact on staff performance?
5. What are the strategies of improving procurement lead time at the Hospital?

1.6 Significance of the Study

This study's main objective was to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. This study aims to encourage effective implementation of proper procurement system in order to mitigate the frequency of stock outs that consequently derail healthcare delivery. The implications are that management and policy makers should look both internally and externally in their attempt to arrest the occurrence that impact on their procurement system in public hospitals.

1.7 Scope of Study

Procurement management is a very significant area of study. For this particular research however, the focus was on only the procurement of medical and laboratory supplies even though the hospital procures other services and works (such as construction and catering and cleaning).

1.8 Report Outline

The research was made up of five major chapters; chapter one consisting of the introduction and which included the background of the study, the statement of the research problem, the study's objectives, the research questions, scope and the significance of the study. Chapter two was devoted to literature review with a look at conceptual to theoretical aspect of effective procurement system on lead time management in public procurement, challenges and its effects on healthcare delivery. Furthermore, the research methodology was tackled in chapter three, in which the data collection and presentation procedures has been examined. Chapter four made up of analysis of the various data gathered based on the responses from the respondents. The data captured from the respondents were analyzed using descriptive statistics indicating the mean values, standard deviation as well as one sample test. Finally, summary of major findings, recommendations and conclusions formed chapter five for this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two focused on reviewing the extant literature on procurement lead time and its associate variables such as supply chain management, classification and components of lead time, factors

influencing lead time, lead time effects, bottlenecks and challenges of public procurement and the development of a conceptual framework for the study.

2.2 The Concept of Procurement

This section of the chapter introduces, defines and explains the concept of public procurement.

2.2.1 Supply Chain Management (SCM) Systems

The idea of supply chain is described by Meijboom et al., (2011) as an approach to all steps needed from start to finish in order to deliver goods and services to the customer. Supply Chain Management (SCM) according to Sila et al., (2006) includes the management of flows between and among stages in an inventory network to maximize total productivity and also engender customer satisfaction (Danese and Romano, 2011). In all these, the procurement function is pivotal to an effective SCM. As per Juha and Pentti's (2008) observation, the procurement influences the accessibility, cost, quality of materials and additionally responsiveness and adaptability of firms in addressing client needs and desires. Lately, different articles have noticed the significance and role of the procurement function or the purchasing and supply management (PSM) function (Gonzalez-Benito, 2007; Ogden et al., 2007).

The importance of the procurement function or the Purchasing and Supply Management (PSM) function in firms is not limited to a particular industry, sector or entity (Saranga and Moser, 2009; Van Weele, 2008). Schiele (2007) refers to the increasing purchasing volume communicated as a rate of a company's aggregate turnover, as proof of the importance of the procurement function's potential in firms. In the healthcare sector for instance, the procurement function plays a critical role in quality health care delivery and as noted by Aronsson et al., (2011), healthcare institutions

could enhance their performance, be more competitive and more efficient when they effectively adopt and implement the procurement function.

2.2.2 Procurement

The Procurement function has been described by Mangan et al., (2008) as a process of identifying and obtaining goods and services and it comprises key activities such as sourcing, acquisition, and further entails all activities right from the determination of potential suppliers through to delivery from supplier to the customer or beneficiaries. It is therefore pertinent that the products/services are suitable and that they are obtained at the best conceivable expense to address the needs of the buyer as far as quality, amount, time, and location are concerned

(Mangan et al., 2008).

2.2.3 Public Procurement

Public procurement refers to the agreement or contracts provided (for financial gain) by public buyer (contracting power) or a utility (elements working in the water, energy, transport and telecommunication sectors) to a supplier, contractor or service provider (Musau, 2015). Public procurement forms a larger portion of a nation's total expenditure and usually, contracts awarded by public sector entities must be advertised and awarded following what the legislation prescribes (Musau, 2015).

Public procurement is the procurement of goods and services on behalf of a public sector entity, for example, a governmental outfit. As indicated by Bovis (2007), public procurement is the procedure in which public sector establishments purchase products and services. Public procurement set ups are exceptionally centralized and typically, there are state procurement boards that oversee the procurement activities of a country. With Public procurement representing up to 20% of the Gross domestic product in least developed nations, Public procurement represents a

sizeable chunk of the worldwide economy (Bovis, 2007). Public procurement regulations often encompass every sector the public sector and supply contracts entered into by a public sector entity. To counteract extortion, waste etc, the law of most nations manages government procurement pretty much intently. It for the most part obliges the procuring power to issue open tenders if the estimation of the procurement surpasses a certain figure

(Bovis, 2007).

2.2.4 Procurement Procedures

Shaw (2010) points out that the process of procuring products and services can be categorized to three main phases. These are identifying the needs of the firm, planning and specification of goods or services required, and looking for suppliers, giving out contracts and managing suppliers to ensure the delivery of items on time. As pointed out by Waters (2004), procurement incorporates the entire procedure of purchasing property and/or services (Waters, 2004). It starts when an office has recognized a need and settled on its procurement need. Procurement proceeds through the procedures of risks appraisal, looking for and assessing option, contract award, delivery of and payment for the property and/or services and, where important, the continuous administration of an agreement and consideration of options related to the contract.

Procurement similarly stretches out to a definitive transfer of property toward the end of its useful life (Waters, 2004). Sound public acquisition arrangements and practices are among the key components of good governance (Otieno, 2004). Otieno (2004) notes the sporadic and irregular procurement serves as avenues through which huge amount of public funds are wasted dissipated and misappropriated. Shaw (2010) points out that the procurement procedure is carried out in three phases. These are need identification, planning and specification of products or services needed, and sourcing, granting, and supplier management to aid swift delivery.

2.2.4.1 Need Identification

An efficient and proper procurement function must commence with the identification of specific needs and that such a need when fulfilled should lead to the betterment of the organization as a whole (Nakamura, 2004).

2.2.4.2 Planning and Specification of Goods or Services Required

Having identified the procurement need, the next stage involves creating a plan that communicates and informs all parties on the strategies of delivering the needed items (Thai et al., 2005). The plan is such a critical item that it is often developed in collaboration with all functions, departments and units of the firm so that a complete integration with the firm's overall strategy is achieved (Shaw, 2010).

2.2.4.3 Sourcing, Awarding, and Supplier Management

Sourcing in this sense has got to do with the process of determining supply sources that can meet both the firm's current and future needs for products and services (Hinson and McCue, 2004). The sourcing procedure finally decided on will be influenced by factors such as the situation and the time needed to conclude the procurement exercise. For instance sourcing during an emergency situation can be swift while that of a normal situation can be more meticulous and lasting.

The steps in the sourcing procedures include the following:

2.2.4.3.1 Market Enquiry

This is the process of asking suppliers to bring their applications and evaluating in detail all tenders and quotations and this can vary based on the company's internal procedures and requirements (Shaw, 2010).

2.2.4.3.2 Evaluation and Awarding

This is the evaluation of tenders and providing contracts to qualified suppliers and this phase is crucial because it determines whether all information and quotations provided by the suppliers are accurate and to the specification of the firm (Maurer, 2004). According to Maurer (2004), usually, the procurement departments of firms embark on the following:

1. Analyzing and assessing the offers pre-agreed standards, specifications, requirements and introducing the analysis to procurement appointed committee;
2. Verifying the capacity of suppliers
3. Evaluating and reviewing the results of product scrutiny where required
4. Verifying key reports where needed
5. Negotiating with suppliers on key cost areas as and when necessary 6. Placing the order and facilitating prompt delivery

Moreover, Shaw (2010) argued that it is essential for the procurement division to evaluate and confer with all stakeholders on cost discrepancies in order to forestall collusion, favoritism, nepotism and cronyism and preference, and to guarantee consultative decision making and sharing of obligations.

2.2.4.3.3 Placing Orders and Contracting

In the wake of assessing and granting of tender, the following steps in the process includes putting requests for the items with the selected suppliers and or creating formal contracts which are then delivered to the suppliers (Shaw, 2010). Critical components of an agreement or contract should comprise cost, design, delivery schedules, quantities and other salient terms and conditions (Shaw, 2010).

2.2.4.3.4 Progressing and Expediting

This stage is critical and it comes after contracts have been awarded. What needs to be done during this stage is constant monitoring, check –ups and follow-ups to ensure that suppliers are on course and indeed making all efforts to deliver items on schedule, within specifications and budget (Bovis, 2007; Shaw, 2010).

2.2.4.3.5 Delivery and Return

Lewis and Roehrich (2009) contend that the procurement function helps in the delivery process through helping is delivering items on time and resolving all issues in relation to the delivery times. In this stage, it is incumbent of procurement managers or those in charge to verify whether items have been delivered to specification and that items delivered are defect-free and where defects are detected, the procedure to follow (Shaw, 2010).

2.2.4.3.6 Payment

Having supplied products on time, within specification and all contract terms met, the next stage is to make provision for paying the supplier. Here the processes include sending the requisite documentations to the finance department for instance for verification and authorization of final payment.

2.2.4.3.7 Review

The review aspect of the procurement process has to do with measuring objectives with the outcome of the procurement exercise to determine whether the objectives of the procurement exercise has been met; reviewing to unearth how the procurement function was implemented and also review the performance of the supplier in order to guide future decisions on what to do or not do in order to achieve procurement success Shaw, 2010.

2.3 Role of Procurement

Lewis and Roehrich (2009) opined that procurement is a major activity of supply chain management and that the procurement function can essentially impact the realization of corporate objectives based on how it is set up. In many firms, procurement form a large portion of total expenditure and ought to be managed adequately to accomplish maximize its effects. Procurement works is the fulcrum of the supply chain of most firms since it facilitates in translating requests into actual products and to satisfy identified needs (Caldwell et al., 2009). Caldwell et al, (2009) further contends that procurement serves three categories of users and these are the internal customers; programmes in responses to crises and ongoing programmes, and requesting for stocks for customers within the firm and the needs of programmes.

Again, Benslimane et al., (2005) are of the view that another main objective of the procurement function is to carry out functions in an effective and therefore resulting in procuring items that meet specifications of the firm (that is ensuring that items procured are of the right quality, right source, right price, right quantity, right place and right time). There are 'six rights' in acquisition and they can be accomplished through following specific objectives of procurement (Benslimane et al, 2005). These particular objectives are;

i. To purchase quality materials having value for money in mind; ii. To guarantee timely delivery through selecting suppliers with good track records; iii. To persistently find, assess and evaluate dependable supply sources; iv. To identify the most reliable suppliers;

v. Assessing suppliers and using only those deemed to have the capacity to deliver on all areas needed; vi. To determine the accessibility of potential sources of new items and follow

market trends in relation to prices and technological developments and vii. To purchase as per the standards set by the firm

In addition, Caldwell et al., (2009) concluded that there are three essential standards of procurement. The main and first principle is that of transparency which provides that all stages in the procurement procedure are fair and precisely recorded. The second principle is that of accountability and it brings up the need for accountability from sponsors and financiers who demand that items are purchased based on meeting laid down procedures and standards before utilizing funds earmarked for the procurement exercise. The last principle is that of efficiency and cost effectiveness and this principle essentially means satisfying the "6R" of ensuring that items procured are of the right quality, right source, right price, right quantity, right place and right time.

2.4 The significance of medical and laboratory supplies to healthcare delivery

It is known that primary healthcare which includes preventive care and acute care are interlinked and depend on each other in healthcare institutions (Elemura, 2010). The health care of individuals is high on the agenda of most countries and this stems from the fact that a healthy population is a precondition for achieving socio-economic development and growth. It is therefore not surprising that out of the eight MDGs, three are related to health care issues and therefore underlining the premium that international agencies such as the WHO and countries place on quality health care delivery (Elemura, 2010).

Medical and laboratory supplies are highly essential and central to the provision of quality healthcare and it is indispensable in diagnosis and eventual treatment and curing diseases. In fact the importance of medical and laboratory supplies goes as far as the detection of diseases during the initial stages and therefore taking immediate and corrective measures to fight these diseases. According to Bates (2005), medical and laboratory supplies are so essential that without them, the

whole health system will grind to a halt. This therefore means that health care providers must at all cost ensure that essential medical and laboratory supplies are always in stock since they can make difference between life and death (Elemura, 2010). As observed by Bates (2005), a vibrant and efficient health post will always ensure that its supplies in terms of medical and laboratory equipment are always in stock and accurate.

2.5 The Concept of Procurement Lead Time

The term lead time is frequently utilized diversely by authors, which is justifiable considering the scope of activities the term covers. For example, lead time is portrayed as the time the client waits until he/she gets the item after putting in a request, i.e. the time between the request form is sent until the item is delivered (Christopher et al., 1979). Perry (1990) considers managing lead times to accomplish consumer satisfaction and loyalty as strategic and competitive move. Perry's study on lead time management point to that it frequently facilitates the identification of likely improvements in the use of the resources of firms.

As indicated by Wedel (1996), a broad meaning of lead time incorporates the time taken to perform every single function from the minute the request was gotten from the customer up to the minute the request has been satisfied. Generally, lead-time comprises crucial functions such as planning manufacturing, assembling delivering of products and services. According to Harland et al., (2009), lead time is extensive and covers key activities such as the time required in bidding for contracts, making awards, delivering the products as well as the time that elapses between when the request is made and when payment is made. Again, Silver et al., (2008) have also described lead time as the time that passes by between when the product requests are placed and the time that the items requested are received into stock and that when effectively done, an efficient lead time

can impact positively or negatively on customer satisfaction depending how effective it is implemented by a firm and inventory costs.

As indicated by Kuhlang et al., (2011), lead time is the duration of time (hours, minutes, and so forth.) needed by any process to change the inputs (materials, customers, cash, data) into outputs (products, services). As such, it is the period between the commencement and completion of a specific procedure. Tersine and Hummingbird (1995) expressed that reducing lead time can be seen as accelerating the throughput of the material or data rather than really cutting a part of the lead time. This view resonates with that of other authors on the subject. Towill (1996) utilized the term 'time pressure' (TP). He additionally expressed that streamlining the supply chain (SC) would enhance the time to market, or reaction time, by compressing lead times.

2.6 Various Types of Lead Time

According to Kuhlang et al., (2011), lead time can be categorized as follows:

2.6.1 Order handling lead time (OHLT)

Order handling lead time is the time required from the minute of receiving a customer order (e.g. via mail) and terminates when the order has been entered, completely processed into the ERP system and is affirmed (Rajaniemi, 2012). This kind of lead time relates to information flowing from upstream in the supply chain (from purchaser to seller). It contains information about the delivery address, the request delivery date, products, quantities and prices. Additionally, it comprises order processing activities such as inventory check, inventory assignment, credit check, a check of the agreement and in the subsequently, returning back an order confirmation to the client (Naylor et al., 1999). According to Naylor et al., (1999) swift and accurate information from

clients can lead to shorter information lead times and in addition material lead times. As indicated by Rajaniemi (2012), the ideal OHLT ought to be one day or less.

2.6.2 Delivery lead time (DLT)

Delivery lead time begins right at the time when the ERP system releases the order to the expedition unit until the moment of real delivery. The expedition unit is required to gather the right products and any other related materials and to create the documentation for shipment. The DLT can be decreased to a certain degree, principally by a reduction of the waiting time or nonvalue adding activities. The real transport time is generally static and relies on upon the distance to the client and selected transport methods. The OHLT and DLT are two lead times that affects the total duration of the order fulfillment process. Gunasekaran et al., (2004) call this process as order lead-time' or total order cycle time. Both OHLT and DLT can be measured through performance pointers that say something about service performance towards clients. According to Durlinger (2013) these two types of lead times determines the External Service Level (ESL).

OF = OHLT + DLT

2.6.3 Supplier lead time

According to Gunasekaran et al., (2004), supplier lead time is the delivery lead time of the supplier contracted. It is the time in hours, minutes and seconds from the period when raw materials are ordered to the period when the ordered materials are received.

2.6.4 Manufacturing lead time

The manufacturing lead time (MLT) is the time from the minute a purchase order (PO) is sent and changed into a manufacturing order (MO), entered into the Enterprise Resource Planning (ERP) system, until the minute that the products are produced and are accessible to be purchased in the distribution center (Rajaniemi, 2012).

RT = SLT + MLT

To put it plainly, ISL and ESL level represent the performance of the replenishment time and order fulfillment process. Assume that the ESL never fails; then the firm will also have a high ISL. On the other hand, the following will likewise apply. Assume the ISL is generally low because of the absence of product accessibility. This shows that the ESL will likewise be poor.

This inevitably can bring about a low reaction time to the market (Figure 2.1).

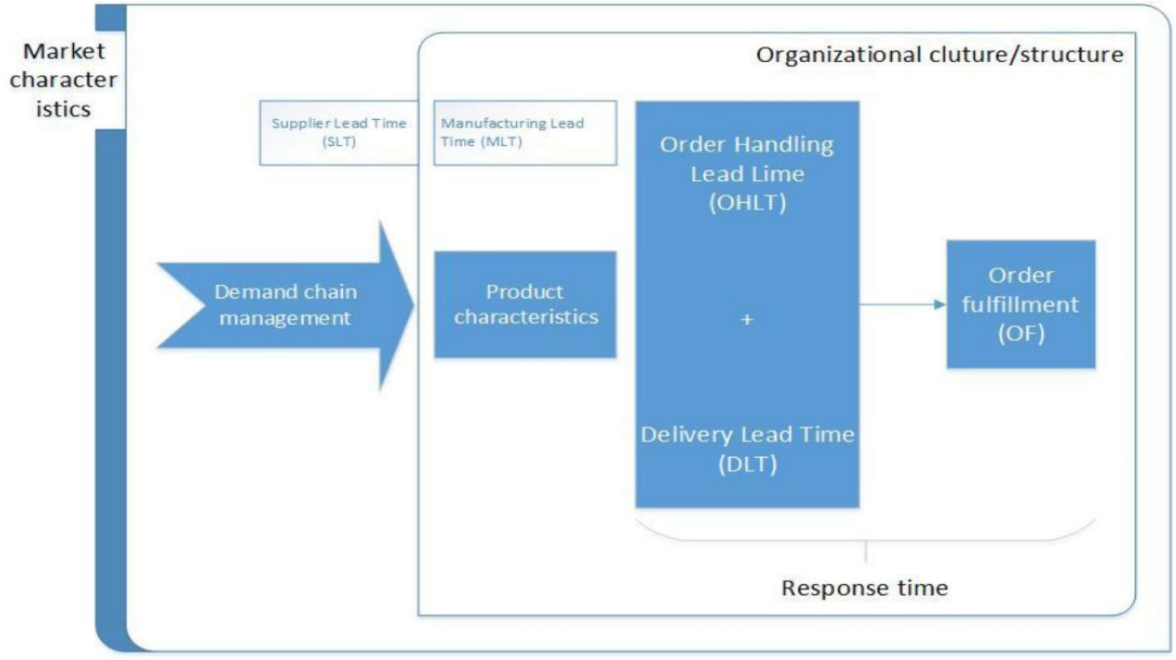

Figure 2.1 From internal to external: lead times influencing order fulfillment

2.7 Lead Time Effects

According to Ray and Jewkes (2004), the costs of products and services and lead time are interlinked. From the perspective of demand side, lead time is said to have a positive effect in terms of the quantity required and the level of stock deemed safe enough to forestall stock outs (Vernimmen et al., 2008). This in effect implies that having long lead times leads to higher expenditures on safety stock as a result of tying up capital, oldness, defective items and higher warehousing cost (Christopher, 2004). Moreover, having higher levels of safety inventory leads to a lower rate of inventory turnover, leading to locking up much needed capital and which inevitably delays the updating of products as well as reaching consumers on time (Christopher, 2004).

Another effect of lead-time is that, the lengthy lead-time makes it difficult for firms to coordinate and plan their operations and it also negatively affects cash flow since it locks up capital in the form of resources (Christopher, 2004). Additionally, the quantity of unplanned and rushed orders from suppliers goes up when longer lead time exists and this is because a higher percentage of orders will not be delivered as per schedule and this increases cost since request will have to be hurriedly done. In effect, a longer lead time leads to challenges in terms of creating a more receptive and responsive supply chain and thereby impeding the likelihood of meeting customers' requests promptly (Christopher, 2011; Stalk, 1988).

According to Tersine and Hummingbird (1995), a reduction of lead times ultimately leads to higher firm performance and the addition of value for customers. This again can lead to gaining competitive advantage in the highly competitive market of today. Tersine and Hummingbird (1995) is again of the view that a shorter lead time engenders the reduction of risks associated with

ordering for products, enables firms to plan better, and overall, lead to trust among channel partners since there is reliability and dependability.

From the foregoing therefore, it becomes obvious that lead time is highly critical to the realization of corporate objectives and also meeting key performance indicators such increased customer satisfaction, internal customer satisfaction, employee motivation, channel partners' satisfaction, increased profitability, growth and sustainability of businesses (Christopher, 2011; Lee et al., 2004; Ray and Jewkes, 2004; Tersine and Hummingbird, 1995; Stalk, 1988).

2.8 Factors Influencing Lead Time

Kagiri (2005) identified key factors influencing lead time to include inadequate knowledge on behalf of procurers, delays, insufficient planning, inadequate facilities and equipment, inadequate financial resources, poor motivation of employees, cumbersome bidding and tendering processes etc. Additionally Lynch (2004) has also identified influencing factors to be inaccurate estimates and forecasts, poor designs, late preparation of tender documents, inaccurate site information etc. According to Thai (2001), factors external to the firm that can affect procurement lead time may comprise the market environment, the legal environment, and the political, technological and social environments. However, the influence of these external factors may for instance depend on the number of suppliers, since a competitive environment may engender a more structured and transparent bidding and tendering processes while a monopolistic situation will call for using one supply which can be faster and less bureaucratic.

Bartezzaghi et al., (1993) endeavored to develop a more extensive perspective of the factors that affect lead time generally and came up with some drivers that can impact on lead-time. These factors are:

1. Uncertainty is the level of knowledge of the input, the change activities and the output of a procedure, such as transmitting and changing forecast information by salesmen of partners and subsidiaries.
2. Execution pace of the resources. This can be seen as resource productivity indicator. This driver is regularly seen as the most critical driver, yet this does not imply that it has the best effect on lead-time.
3. Demand-capacity ration which alludes to the level of resource saturation
4. The location and layout of the resources influences the required time to process materials and exchange information. It can likewise be considered in connection with the area and distance from the suppliers and the exchange of information.
5. The level of parallelization of consecutive exercises that refers to the extent to which it is conceivable to execute activities in the same time, e.g., concurrently executing the required checks.
6. Leadership and problem solving attributes allude to the decision- making procedures and the level of negotiation of managerial decisions, level of delegation and precision of performance measurement systems. This factor can be related to the strategic, tactical and operational level.
7. Erratic flow is the level of unevenness of demand which is related to the unevenness of the procedure. This sporadic flow is identified with the load and transfer batch for the unevenness of process. This may bring about challenges with making a forecast.

8. Variety is a vague factor. From one viewpoint it identifies with the mix of products which utilize the resources of a specific procedure. Then again it alludes to the multifaceted nature of those products that can be measured by the number of parts and the number of distinctive technologies and subsystems of the output. This driver additionally refers to the variability of procedures in general.
9. Reliability of procedures and defectiveness. Process dependability can be seen as the likelihood that an object cannot be handled because of inadequate resources. The process reliability of an aggregate request is made up of several products and where one product is missing, it affects the reliability of the entire process. Defectiveness has to do with the likelihood that an object will not meet specifications.
10. Learning knowledge alludes to the experience picked up in reducing lead time by improving the effects of factors at a higher level such as leadership and critical thinking and problem solving abilities. This experience can be picked up by learning from different factors.
11. Connections can be depicted in three sections. To begin with, planning and control policies that direct the scheduling of activities and importance of resources used. Second, coordinating systems that identify the effect of organizational liaison devices on lead time. Third, the relations between the lead times of diverse activities. The last can be presented by means of a total lead-time model.

2.9 Causes of delay in the public procurement process

The public procurement process can be laden with several bottlenecks such as delays, bureaucracy, inadequate knowledge and capacity to implement the procurement function without falling foul of

the law and corruption. Some of the major bottlenecks of public sector procurement are as presented in this section of the chapter.

2.9.1 Access to Funds

The unavailability of adequate funds (especially with public sector procurement) is another major bottleneck (Shaw, 2010). This challenge is associated with developing countries where large portions of the budgets are donor funded and delays in the release of funds can derail or stall certain procurement functions (CSCMP, 2010).

2.9.2 Transparency/Corruption

Corruption and nefarious activities of certain public officials tends to affect the procurement process especially in the public sector (Shaw, 2010). The public sector procurement process is synonymous with corruption, waste and dissipation of scarce financial resources. For instance corruption, nepotism and cronyism are all bottlenecks that tend to stampede the procurement such as during the bidding and tendering stage.

2.9.3 Blockage in Procurement Process

The procurement function is also prone to bottlenecks such as inadequate staff, unavailability of designated signatories, deliberately frustrating the process through long and winding bureaucracies, and inability to identify key personnel with the power and authority to give approval (Shaw, 2010). For instance, heads of institutions, Ministers etc may not be available for long periods of time to sign certain documents and therefore stalling the entire procurement process.

2.9.4 External Systems

The procurement process sometimes encounters bottlenecks which is external to the operations of the company involved (Hinson and McCue, 2004). For instance, banking transactions and port clearance can be very frustrating since certain criteria are used.

2.9.5 Slow and Cumbersome Process

The procurement function in spite of its importance to the development of economies as well as the size of its budget in relation to total GDP's of countries can still encounter severe bottlenecks such as slow processes, such as competitive bidding and following legal and public procurement procedures which tends to delay the procurement process Caldwell et al., 2009; Shaw, 2010).

2.9.6 Small Quantity

Sometimes purchasing products in small quantities can be challenging since suppliers may be unable to supply small amounts and even when they are willing, it can be very expensive. This is because suppliers typically have a minimum order requirement and going below this threshold can be challenging (Thai et al., 2005).

2.9.7 Quality

There can be challenges with respect to products or services procured and this therefore requires being meticulous in the procurement process and placing more emphasis on the specification of the design, critically selecting suppliers with the capacity, experience and reputation of supplying quality products and inspecting and testing prototypes to ensure that they conform to specification (Thai et al., 2005).

2.10 Strategies of Improving the Procurement Function and Reducing Lead Time

Reducing lead time is very important. It is fundamental that organizations compare themselves and other firms to test that value for money is being accomplished, additionally as a feature of the procedure of looking for nonstop change and identification of good practice. This is frequently done through a benchmarking procedure (Maurer, 2004). The main role of benchmarking is to enhance the productivity of the firm by testing how it is performing, whether it is accomplishing better performance and the rate at which its performance is progressing. Again the procurement

function should be consistently coordinated with other aspects of the supply chain within the firm and this includes an effective warehousing and distribution function, astute financial management and efficient human resources management. A coordinated way to deal with service delivery will most likely add to a more efficient and reliable health care delivery. As pointed out by Shaw (2010), having unambiguous lines of communication, welltimed circulation of information and consistent response will in making the procurement function more effective.

According to Towill (1996), the following four strategies can be used to enhance lead time:

1. Integration: re-building interfaces between resulting processes.
2. Elimination: removing activities that do not add value.
3. Convergence: parallelize working procedures.
4. Compression: reducing time within a process by improving available resources or working techniques.

2.11 Developing a healthcare conceptual framework for Supply Chain Management

Even though various researchers such as Shah (2004) and Kowalski's JIT, and Burns' Healthcare Supply Chain Configuration have been used as guidelines in healthcare supply chain management, the researcher is of the opinion that having a conceptual framework that combines a set of connected cycles based on logistics processes involved in the flow of information and items is needed still.

Ghana is a developing country that is plagued with the challenges of a typical developing country. It is not uncommon to hear about stories of innocent patients dying just because of the shortage of basic medical and laboratory supplies such as syringes, needles etc. As further pointed out by McPake and Hanson (2004), several health care institutions in the country have consistently failed

to meet patients' expectations due to poor performances. It has therefore become very essential to ensure the development of a conceptual framework that factors in the clients and not the hospitals. When such a framework and guideline is put into force, it will go a long way in ensuring medical and laboratory supplies management are taken seriously in order to forestall the usual unfortunate situations of deaths that could have been abolished easily.

Thus based on the various models discussed above, the researcher is coming from the angle of combining SCM and effective healthcare delivery that tie in all the processes from the moment a patient walks in to a hospital till he comes out. This conceptual framework will be employed in developing questionnaires, analyzing the data collected and assessing the findings of the study. According to Persson (1995), the framework suggests several means of improving performance and this are:

1. To reduce and redistribute lead times
2. To reduce reservations and doubts
3. Redistribute frequencies
4. Eliminate to desired demand blueprint
5. Simplify procedures and processes
6. Differentiating the methods of cooperating with channel partners

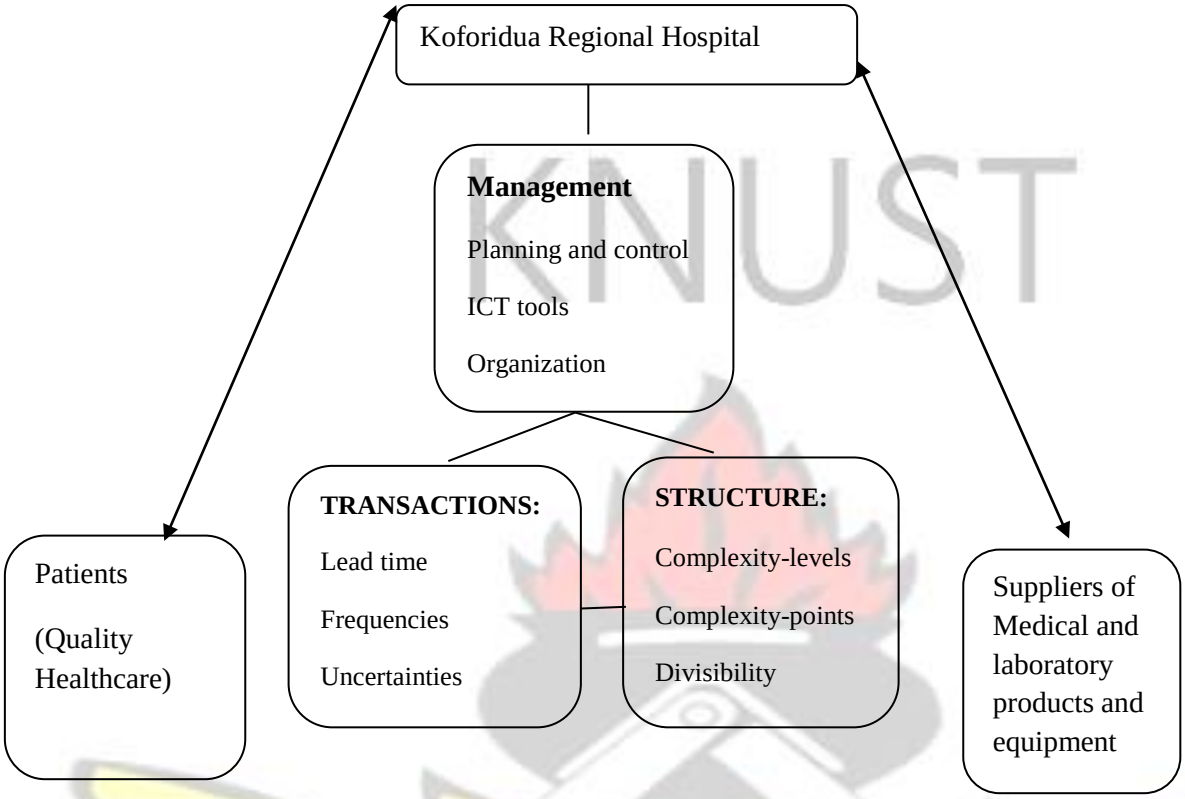

Figure 2.2: A conceptual framework for healthcare SCM

Source: Developed by the Researcher

2.12 Empirical Review

Oyamo and Mburu (2014) sought to investigate the impact of procurement procedures in the distribution of pharmaceutical products in Kenya and found that sourcing plays a key role in quality health care delivery and that other vital component such as designs, planning and choice of suppliers. Once more, Musau (2015) tried identifying the influence of the procurement function on the supply of products at Kenya Pipeline Company. The study found that the present buying system is in a position to sustain in the organizational operations. It was likewise found from the study that procurement influences supply of products and services. Again, Oballah et al., (2015) examined the impact of inventory management on organizational performance of

Kenya's public healthcare institutions and found that inventory investment and inventory reduction have a negative impact on organizational performance. The study therefore prescribes that the hospitals ought to guarantee that losses emanating from inventory shrinkage related to medicines are reduced.

Besides, Kanyoma and Khomba (2013) explored the effect of procurement operations on health care delivery in Malawi's public health care delivery system. The study looked to affirm the existence, establish the frequency and the causes and effects of stock outs of essential drugs. The study found that the procurement function negatively affected health care delivery through inability to ensure the accessibility of medications. Frequent stock outs of medications were confirmed, the impacts of which on healthcare delivery ranged from death of patients, deterioration of medical conditions of patients, overcrowding and the transfer of patients to other medical facilities.

2.13 Conceptual Framework

This study adopts the framework used by Oyamo and Mburu (2014) to operationalize the study's objectives. Oyamo and Mburu (2014) sought to identify the impact of procurement procedures in the distribution of pharmaceutical products in Kenyan public hospitals by using four main variables namely – specification design, procurement planning and contracting and supplier selection as illustrated in Figure 2.3.

2.14.1 Specification design

It is vital that the right specification is met based on the legal framework of the country or the terms of the contract. Designing and meeting the right specification entails having employees with the requisite expertise and experience (Oyamo and Mburu, 2014).

2.14.2 Procurement planning

In arranging or planning distribution systems to facilitate the maximization of procurement function while reducing total expenditure, it is essential that firms give maximum attention to all aspects of the system (Royer, 2003).

2.14.3 Contracting

Contracting or outsourcing is using providers external to the firm in supplying essential items to the firm (Royer, 2003). According to Royer (2003), it is not uncommon for health care facilities to outsource certain aspects of their operations in order to focuses on their core business of health delivery.

2.14.4 Supplier selection

Choosing the right suppliers can help procurers take care of the buyer's demand for higher quality medical and laboratory supplies while additionally meeting high regulatory benchmarks (Oyamo and Mburu, 2014). At the point when choosing qualified suppliers, firms need to take into consideration the roles of all departments and identify specific needs in order to agree on all procurements before settling on a supplier.

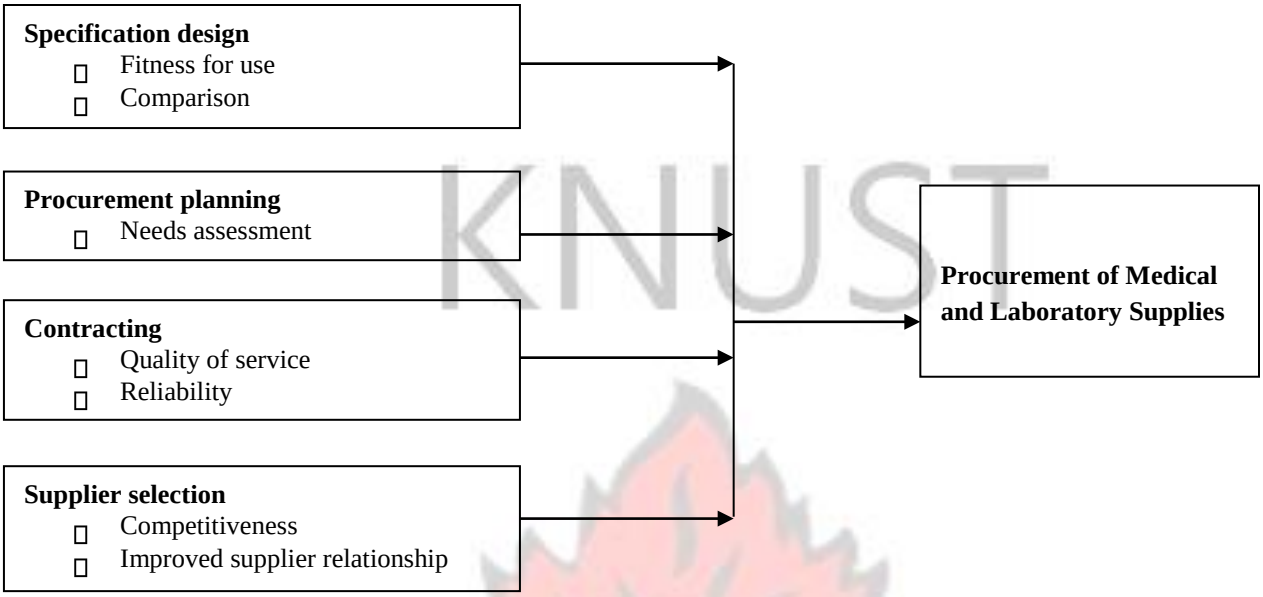

Figure 2.3 Conceptual framework

Source: Adopted from Oyamo and Mburu (2014)

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presented the research strategy, design, process and the techniques adopted to collect the relevant data for the study as well as the data analysis techniques to be deployed. It should be remembered that the rational for this research was to empirically investigate and to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. This chapter dealt with the methods of the research. It discussed issues such as the research instrument, data collection, and also how data was obtained from primary and secondary sources.

3.2 Research Methods Defined and Explained

Research can be said to be very essential and key to the development of all sectors of societies; especially in business and academic (Amaratunga et al., 2002). However, and in spite of all its importance, there is no agreement on its definition. According to (Amaratunga et al., 2002), the disagreement stems from the fact that every research has a different meaning to the researcher involved, as well as meaning differently to different people, institutions, agencies etc. According to (Amaratunga et al, 2002), however, from the various definitions available, they all essentially agree that research is regarded as a process of enquiry and investigation, that it is systematic and methodological; and finally that research leads to an expansion of knowledge.

Research should always be conducted within the ambit of inquiry which depends on experience, hard facts, principles, laws, hypothesis, concepts, constructs etc (Amaratunga et al, 2002). According to the researchers, the above concepts of research when brought together forms a symbolic and rational system of inquiry. Moreover, they form the language of research which engenders precision in the diction or jargon among those in the field of research.

3.3 Quantitative and Qualitative Research Methodology

Research has been classified into two types. They are qualitative and quantitative as explained in the two divergent schools of thought above. Qualitative methods focus on the diction, words and observing the subjects in order to describe reality (Amaratunga et al., 2002). Quantitative methods on the other hand come from the academics and it emphasizes serious belief and trust in figures and which are used to stand for opinions and concepts. It has been said that the last two decades has seen intense debates about the comparative strengths and advantages of the two approaches. As stated by Amaratunga et al., (2002), even though the precise foundation of the two approaches

differs among researchers and authors in terms of definition, there exist a major concurrence with regard to the basic debates and their ramifications for conducting a research (Amaratunga et al., 2002).

The consensus among researchers nowadays is that both quantitative and qualitative methods are best seen as complementing each other and as such; whenever possible should be combined Amaratunga et al., (2002). This stance has led to the development of what is now referred to as "triangulation" in research (Yin, 2003). According to Amaratunga et al., (2002), triangulation is the process of combining different methodologies in the research of the same phenomenon. Triangulation is assumed to be effective due to the fact that it compensates for the demerits of each single method by counter-balancing the advantages that each has. The term is also used to refer to a wide method that mixes "multiple observers, theoretical perspectives and methodologies" (Amaratunga et al., 2002). It is further employed in describing research approaches which uses a mixture of both the qualitative and quantitative approaches in the investigation of the same observable fact.

This study therefore utilized both quantitative and qualitative methodologies in operationalizing its objectives.

3.4 The Research Design

Neuman (2007) defines a research design as a strategy for selecting sources and the sort of information to be used in answering the research questions. The research design is used to specify the link or connection existing among the variables of the research. It further outlines every single step right from the formulation of the hypothesis to the final analysis of the collected empirical data. It can be said to be the blue print of the study in that it among other things focuses on the

means of collecting data, the sampling type used, and also the resource limitations confronting the researcher.

The focus of this study was to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. Thus it was essential that the researcher contacted the top management personnel, key departments and employees of the Koforidua Regional Hospital who were deemed qualified to answer the research questions. In this regard, the best method to use was the case study approach since it allowed the researcher to detailed data from the respondents. Again, the case study was used because it allowed for a detailed and an in depth analysis of the subject matter.

3.5 Types and Sources of Data

There were various research methods and techniques available but the choice for this study involved organized and logical steps the gathering and analysis of the information or data so collected. Thus, the survey method was used because the research demanded information from the relevant divisions and departments of the organization under study. The essence of deploying the survey method in this research is to make sure that any later research or analysis of the attributes of the population sampled will be precise and also the findings and results being able to be generalized everywhere in the world. Thus data was collected from all relevant sources, secondary (journals, periodicals, textbooks, websites, etc) and primary (questionnaires).

3.5.1 Primary Research Data

As Creswell (2003) pointed out, the essence of any data collection method is the ability to unambiguously answer the research questions. The data collected for this study used the survey

method in order to aid in the interpretation. This is to say, data was collected directly from key and relevant officials of Koforidua Regional Hospital. Most of the questions asked in the study were closed ended. However, some of the information collected was via opened ended questions. Closed ended questions were used because it allowed answers within a limited set and it used essentially to gather factual data such as gender, age, as well as information on attitudes and opinions. This actually enables the researcher to have a high degree of control over the questionnaire (Yin, 2003). In fact, the control is very important in that it facilitates the analysis of the data since there is consistency across all responses. It further makes it easier to key in the data into a software package and thus reducing errors (Neuman, 2007). Moreover, it has been observed that the closed ended questions reduce fatigues on the part of respondents when answering them. This engenders a higher response rate.

3.5.2 Secondary Research Data

Secondary data is data already collected for some other purposes. The secondary data sources for this study included but not limited to published articles, books, reports related to the subject area as well as internet sources. These sources are generally used in the literature review chapters to develop the arguments that serve as the basis for the empirical study.

3.6 Population of the Study

Cooper and Sciendler (2001) define population as the total collection of element about which some inferences are made. Therefore a population is the aggregation of all cases that conform to some designated set of specification. The population of this research is therefore the management and staff drawn from the procurement and supply chain departments of the Koforidua Regional Hospital.

3.6.1 Target Population

As already stated, the study is a case study type and as such, the target population was the key and relevant personnel of the hospital made up of Procurement Officers, Pharmacists, Health Services Administrators and Finance Officers as well as any other official of the hospital who was deemed significant in terms of information and access.

3.7 Sampling and Sampling Procedure

A sample is referred to as the percentage or fraction of the population that answers the research question (Neuman, 2007). It can be said that the reasons for undertaking surveys is to enable the researcher generalize from the sample to the population that the hypothesis regarding attitudes, behaviour among others can be made (Babbie, 1998). Thus how respondents are selected for a particular study is very critical for the success or otherwise of the study.

3.7.1 Non Probability Sampling

In terms of the non-probability sampling, the researcher adopted the purposive sampling type. Here, the researcher selected the respondents specifically based on the fact that they have the background and relevant pieces of information that matters to the study.

3.7.2 Sampling Size

The sample size of this study was sixty key and relevant officials of the Koforidua Regional Hospital. This sample size was drawn from a total population of about one hundred and fifty (150).

3.8 Administration of the Research Instrument

There are three ways to collecting data- observation, direct communication (through interviews and questionnaires), and the thirdly through using secondary data (Pizam, 1999). Two of three categories (direct communication and use of secondary data) were used for this project.

The question of getting the necessary co-operation for the purpose of data collection has been fraught with a lot of problems; especially with regard to error free responses and the number of returned and completed questionnaires. To avoid this, the researcher personally administered the questionnaires on the employees of the hosiptal. The researcher used a non –probability sampling technique in order to ensure a fair and accurate sampling procedure.

Fieldwork to collect the data for this study took two weeks. After the explanation of the relevance and objectives of the study, the interviewers were then given the questionnaires and given a week to complete.

3.9 Processing and Analysis of Data

Analyzing and interpreting research data forms a key part of any research. Defining the analytical method is vital to any research strategy (Amaratunga et al, 2002). Different approaches actually can be used in investigating, categorizing, tabulating and or having a combination of the facts to deal with the research questions. Given the varied sources of data gathered for the study, the researcher had to address how the data would be processed and analyzed. This section discusses the manner in the data so collected were treated (processed and analyzed). This was done to allow for as much comparability as possible between the data sets and the survey data before discussing the way in which the data was analyzed.

The essence of analyzing the information from the research questions is to summarize the data in such a way that it both answers the stated research questions and as well as meet the research objectives. The data was analyzed in both descriptive and quantitative forms such using frequency tables, percentages etc. The datasets so collected was then coded and translated to an SPSS (Statistical Package for Social Science) and Microsoft Excel. SPSS especially is a versatile

computer package that has the ability to perform a wide variety of statistical procedures (Yin, 2003).

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter discussed data analysis, findings and implications. The data were gathered through the survey method. The data analysis and findings of the study were presented in the various sections of the chapter.

4.2 Bio Data

This section of the study focused on identifying the background information of the respondents. The main socio demographic information of the respondents discussed included their academic and professional qualifications and the number of years they have worked with the hospital.

Table 4.1: Socio demographic information of respondents

Socio demographics	Frequency	Percent
Academic & Professional qualifications		
BSc/HND	49	81.7
MSc/MBA	11	18.3
Number of years worked with the Hospital		
Less than 5 years	16	26.7
5-10 years	30	50.0

10 years +	14	23.3

Source: Field Survey, 2015

It was found as shown in Table 4.1 that out of the sixty respondents contacted, forty nine respondents (81.7%) were BSc/HND holders and the remaining eleven respondents (18.3%) were MSc/MBA or higher degree holders. This finding implies that the respondents were highly educated to understand the issues being discussed in this study and more importantly, make meaningful contributions needed for drawing a valid conclusion. It was also found as illustrated in Table 4.1 that thirty respondents had about 5 – 10 years of working experience, sixteen (26.7%) had about less than 5 years of working experience and fourteen respondents (23.3%) had over 10 years of working experience. The fact that most (50%) of the respondents have been with the hospital for between 5 – 10 years implies that they have the requisite experience and knowledge about the hospital's procurement practices and activities and therefore well qualified to provide accurate and reliable information necessary for the drawing of a valid conclusion.

4.2.1 The major roles of respondents within the hospital

As can be seen in Table 4.2, the roles of the respondents interviewed in the hospital were widely distributed. This spanned across about twenty nine different job roles. This finding implies that the study sampled the views and opinions of key and relevant personnel of the hospital and therefore suggesting that accurate and factual information which was needed to draw valid and reliable conclusion was obtained all things being equal.

Table 4.2 The major roles of respondents within the hospital

Position	Frequency	Percent
Director/CEO	1	1.7
Supply Chain/Procurement Manager	7	11.7
Pharmacist	6	10.0

Store Manager/Distribution	8	13.3
Account Officer	1	1.7
Accountant	2	3.3
Administrator Of Health Services	1	1.7
Anesthetist	1	1.7
Assistant Equipment Manager	1	1.7
Biomedical Scientist	3	5.0
Clinical Coordinator	1	1.7
Equipment Manager	1	1.7
Finance Officer	2	3.3
Head Of Dental Department	1	1.7
Health Administration And Support Services	1	1.7
HR Officer	1	1.7
Intern	2	3.3
Internal Auditor	1	1.7
Lab Technician	2	3.3
Medical Officer	2	3.3
Medical Records Officer	1	1.7
Nurse In Charge	1	1.7
Nurse Manager	1	1.7
Optometrist	1	1.7
Pharmacy Technician	1	1.7
Physician Assistant	1	1.7
Service Personnel	7	11.7
Statistician	1	1.7
X-Ray Technician	1	1.7
Total	60	100.0

Source: Filed data (2015)

4.3 The Average Procurement Lead Time for All Procurement Methods Employed By the Hospital

From the literature review in chapter two of this study, it was found out that the procurement function is as a complex system that involves the flow of different products types and the participation of several stakeholders. The main purpose of the healthcare procurement function is

to deliver products in a timely manner, in order to fulfill the needs of those providing healthcare. This section of the study identified the sources of supply of the Regional hospital. In relation to the first objective of the study therefore, following were found.

4.3.1 The sources of medical and laboratory supplies to the hospitals

As can be seen in Table 4.3, the main source of medical supply at the hospital is the central medical stores of MOH. Another source was found to be from vendors (95.0%) selected vendors, thirty three (55.1%) selected local/foreign manufacturing companies and three respondents (5.1%) selected manufacturers' representatives as the sources of medical and laboratory supplies for the hospital. This finding suggests that in addition to relying on the central medical stores for supplies, the hospital relies on other sources such as vendors and manufacturers. According to Kaur and Hall, (2001), hospitals should only procure supplies and equipment from a licensed, trustworthy and dependable source. Before buying, they need to ask the supplier which safety and performance standards are to be adhered to.

Table 4.3 The sources of medical laboratory supplies to the hospital

Source	Frequency	Percent
From the Central Medical supplies of MOH	60	100.0
Vendors	57	95.0
Local/foreign manufacturing companies	33	55.1
Manufacturer's representative	3	5.1

Source: Filed data (2015)

4.3.2 The number of inventory turns per year

It was found that fifty three respondents (88.3%) indicated the number of inventory turns per year at the hospital to be over 10 times, five respondents (8.3%) indicate it to be less than 5 times and

two respondents (3.3%) indicated it to 5 – 10 times. See Table 4.4 for details. This implies that the hospital on the average places 10 orders in a year. It was quite surprising to find out that such a big hospital that caters for the needs of the numerous patients in the regional capital and its environs orders only 10 times in a year. It could be that the hospital's procurement management is working excellently or there is a serious lapse.

Table 4.4 The number of inventory turns per year

	Frequency	Percent	Valid Percent	Cumulative Percent
Less Than 5 Times	5	8.3	8.3	8.3
5 - 10 Times	2	3.3	3.3	11.7
Above 10 Times	53	88.3	88.3	100.0
Total	60	100.0	100.0	

Source: Filed data (2015)

4.3.3 The average procurement lead time for drugs and laboratory supplies at the hospitals

It was interesting to find as illustrated in Table 4.5 that all the respondents indicated the average procurement lead time for drugs and laboratory supplies at the hospital to be about 1 – 4 weeks. This finding implies that the hospital has lead time of between a week to a month. This finding implies that the hospital generally must ensure it has enough stock and must not wait till it runs out of stock since it takes anywhere from a week to a month to get supplies requested from the central medical stores. Again, this finding suggest that the hospital must not request for medical supplies too early since as Ray and Jewkes (2004) found out, placing request for inventories too early will lead to receiving supplies that may not be necessarily be needed and thereby locking scare financial resources in inventory. This is especially important when as illustrated in Figure

4.1, forty eight respondents (80.0%) indicated that the delivery of medical and laboratory supplies and equipment to the hospital is always just on time while twelve respondents (20.0%) indicated that it has always been delayed.

Table 4.5 The average procurement lead time for drugs and laboratory supplies at the hospital

	Frequency	Percent	Valid Percent	Cumulative Percent
1 - 4 weeks	60	100.0	100.0	100.0

Source: Filed data (2015)

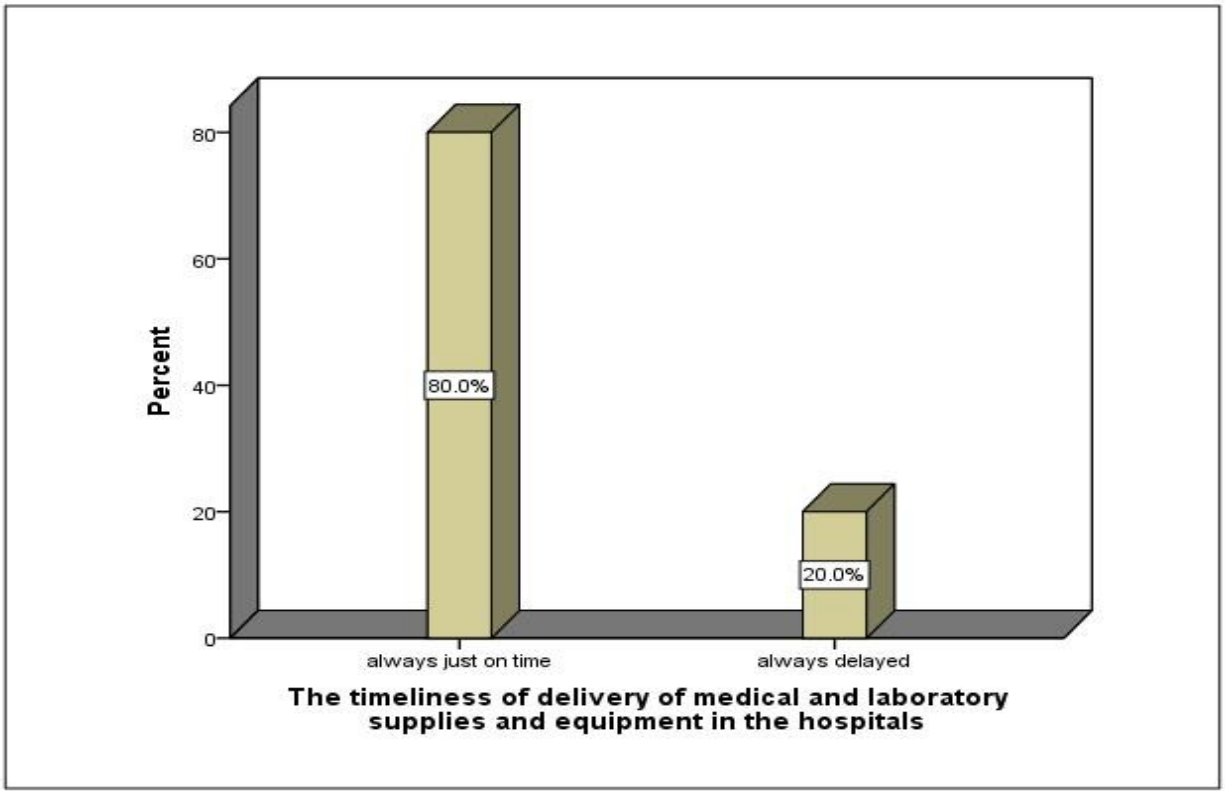

Figure 4.1 The timeliness of delivery of medical and laboratory supplies and equipment in the hospital

Source: Filed data (2015)

4.3.4 The frequency of occurrence of stock outs in the hospital

As can again be seen in Figure 4.2, fifty seven respondents (95.0%) indicated that stock out occurs once a month in the hospital. Two (3.3%) indicated it to occur every week and the remaining one respondent (1.7%) indicated it to be occurring every day. This finding implies that occasionally, the hospital experiences stock-outs. This finding is disturbing since medical and laboratory supplies are vital to the delivery of quality healthcare and a stock out can therefore be disastrous. Procurement management is more complex in healthcare *vis-à-vis* other industries because of the impact on people's health requiring adequate and accurate medical supply according to the patient's needs (Beier, 1995). The implication of this finding is that innocent lives can be lost due to stock outs especially in cases of emergencies (which can occur) daily at the hospital.

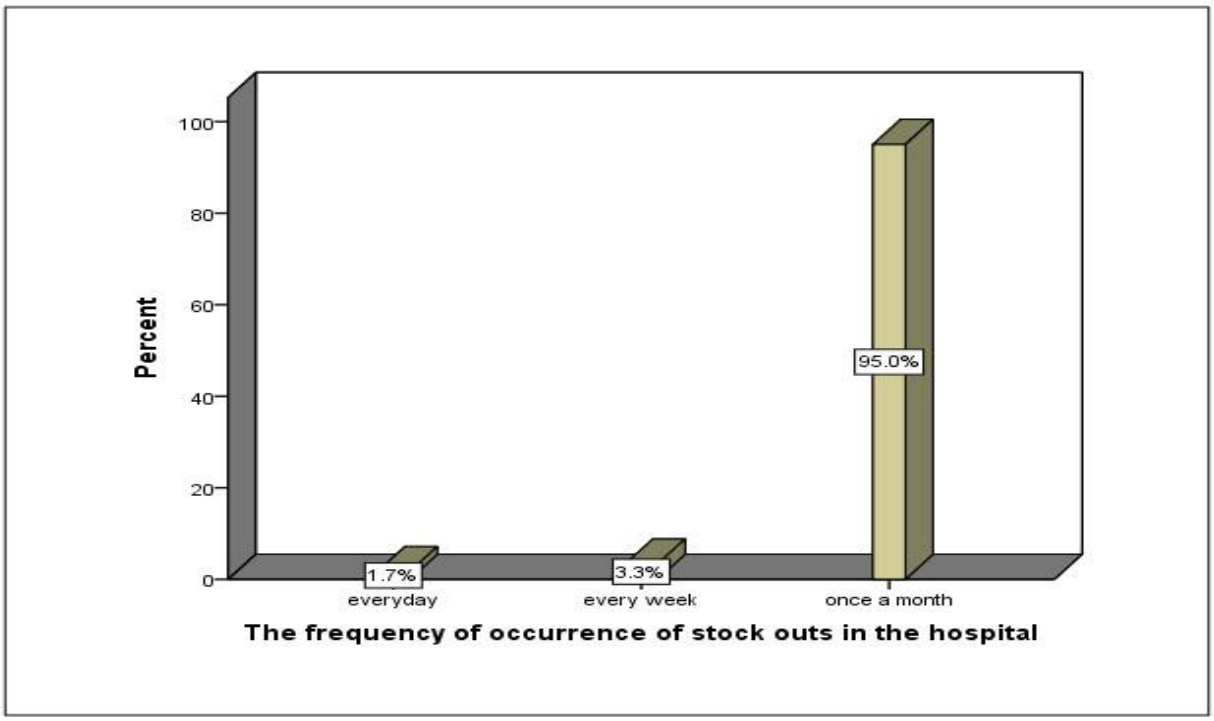

Figure 4.2 The frequency of occurrence of stock outs in the hospital

Source: Filed data (2015)

4.3.5 Methods used to calculate reorder point and the Re-order Quantity for inventories in the hospital

It was reassuring to find as shown in Table 4.6 that as many as fifty nine respondents (98.3%) reported that the hospital uses a computer software application to calculate the reorder point and the re-order quantity for inventories in the hospital while only one respondent (1.7%) reported the use of subjective calculations by the employees. This finding implies that the hospital employs technology to manage its procurement function. This finding also implies that using technology can facilitate better procurement management because as procurement management also aims at integrating all purchasing activities to improve relationships at all levels (internal operations, supplier networks, and distribution channel) to meet the competitive edge and satisfy the customer. According to Simchi-Levi (2003), the effects of MIS in SCM include providing information availability and visibility; enabling a single point of contact for data; allowing decisions based on total supply chain information and enabling collaboration with partners. Information sharing between partners in the supply chain is crucial and these collaboration and integration attempts should be accompanied by MIS initiatives. MIS initiatives such as Just –InTime (JIT), Enterprise resource Planning (ERP), social media, internet and web services for communication between partners should be addressed effectively. The adoption of MIS can be challenging although especially in remote parts of the country where internet connectivity is highly unreliable.

This finding actually is not consistent with Beier (1995) who conducted a study on inventory management in the healthcare, and found that hospitals hold high levels of safety stocks, which was attributed to poorly implemented inventory management practices techniques and to the use

of personal judgment in determining safety stock levels, rather than using more scientific approaches.

Table 4.6 Methods used to calculate reorder point and the re-order quantity for inventories in the hospital

	Frequency	Percent	Valid Percent	Cumulative Percent
Software applications	59	98.3	98.3	98.3
Periodic subjective calculations	1	1.7	1.7	100.0
Total	**60**	**100.0**	**100.0**	

Source: Filed data (2015)

4.4 The Factors that Affect Average Procurement Lead Time

This section analyzed the factors that affect average procurement lead time. As illustrated in Table 4.7, the five most important factors that affect average procurement lead time can be seen in the following order: (1) Effective need identification leading to prompt reordering of medical and laboratory supplies (RII=0.943); (2) Adequate knowledge of Ghana's procurement act (legal factor) (RII= 0.937); (32) Effective supplier selection (the reliability and capacity of suppliers) (RII= 0.937); (4) Adequate and timely release of funds to the procurement unit (Financial factor) (RII= 0.927) and (5) Top management support (motivation and management factor)) (RII= 0.927).

Table 4.7 The Factors that Affect Average Procurement Lead Time

Factors	No. of Respondents							
	5	**4**	**3**	**2**	**1**	**Total**	**RII**	**Rank**
Effective need identification leading to prompt reordering of medical and laboratory supplies	43	17	0	0	0	60	0.943	**1st**
Adequate knowledge of Ghana's procurement act (legal factor)	42	17	1	0	0	60	0.937	**2nd**
Effective supplier selection (the reliability and capacity of suppliers)	41	19	0	0	0	60	0.937	**3rd**
Adequate and timely release of funds to the procurement unit (Financial factor)	39	20	1	0	0	60	0.927	**4th**
Top management support (motivation and management factor)	42	16	1	0	1	60	0.927	**5th**

Source: Field Survey, 2015

Need Identification (RII=0.943)

This study found that the single most important factor that influences average procurement lead time is need identification (table 4.7). This finding is significant and points to the fact that covering the basics by looking from within and identifying exactly what is needed by the hospital goes a long way is ensuring better lead time management. This finding means that hospitals must assess their current operations, work with Physicians and other stakeholders such as Nurses, Matrons,

Midwives, Procurers and top management, accurately determine what the drugs and laboratory supplies needs are, agree on this need before looking outside in terms of suppliers that can meet this need. This finding actually resonates with what authors such as Christopher (2011); Lee et al., (2004) and Shaw (2010) found to the effect that identifying the specific needs of a firm goes a long way in determining how fast or how slow lead time can be.

Adequate knowledge of Ghana's procurement act (legal factor) (RII= 0.937)

It was also found as shown in Table 4.7 that the second most important factor in determining procurement lead time in the Koforidua Regional Hospital is having adequate knowledge of Ghana's procurement act (legal factor). This finding implies that knowledgeable procurers go a long way in effectively managing the procurement function and in fact, reducing the average lead time. This finding resonates with what Manuj and Sahin (2011) observed to the effect that today's supply chain and procurement managers find their roles to be evolving into managing more complex procurement and supply chains that are defined by rapidly changing, continuously expanding and often uncertain business environments. Given the dynamism and uncertainty of the environment, procurement professionals take on responsibility for more complicated tasks and face increased challenges in supply chain decision making and that having the requisite knowledge is vital to procurement success.

Effective supplier selection (the reliability and capacity of suppliers) (RII= 0.937)

This finding implies that having the ability to choose the right suppliers can go a long way in reducing the average lead-time and further underscores the fact that the lack of understanding of the complexity drivers, and poorly designed and executed strategies to address the complexity in

selecting dependable and reliable suppliers can make procurement decision-making much more difficult and often lead to undesirable outcomes (Manuj and Sahin, 2011).

Adequate and timely release of funds to the procurement unit (Financial factor) (RII= 0.927)

Top management support has been identified as critical in any major move of a firm since they consist of individuals with power and authority to make strategic decisions (Orlikowski, 1991). Top management can thus develop clear-cut supply chain collaboration while at the same time sending signals to different parts of the firm about the importance of supply chain collaboration. Give the limited nature of resources and the many competing projects, top management support ensures that supply chain collaborations get the necessary resources and capabilities.

Top management support (management factor) (RII= 0.927)

Top management was also found to be significant in determining the procurement lead time at the hospital (Table 4.7). This finding implies that motivating employees will ensure their satisfaction and by so doing, engendering enhanced productivity, commitment and loyalty. As pointed out by Molander (1996), the work environment rules have changed, so too must the way firms meet the motivational needs of today's employees. To be successful, today's firms must develop a relationship between themselves and employees that will fulfill the continually changing needs of both parties. At a minimum, workers expect their firms to provide fair pay, safe working conditions and fair treatment. According to Molander (1996), successful firms are those that deal with employees who work towards attaining the goals of the firm and have a strong desire to remain in the company.

4.5 The Impact of Procurement Lead Time on Product Availability

This section presented the findings in relation to the third objective of the study which is analyzing the impact of procurement lead time on product availability. As illustrated in Table 4.8, the impact as per the degree of significance are as presented in the following order: (1) Ontime delivery/Due-date performance in the hospital (RII=0.9467); (2) Performance improvement and better SCM in the hospital (RII= 0.9400); (3) Procurement lead time have curbed the incidence of stock outs in the hospital (RII= 0.9367); (4) Reduced the inventory costs of the hospital (RII= 0.9300) and (5) Top management support (motivation and management factor)) (RII= 0.9233).

Table 4.8 The Impact of Procurement Lead Time On Product Availability

Factors	**RII**	**Rank**
On-time delivery/Due-date performance in the hospital	0.9467	**1st**
Performance improvement and better SCM in the hospital	0.9400	**2nd**
Procurement lead time have curbed the incidence of stock outs in the hospital	0.9367	**3rd**
Reduced the inventory costs of the hospital	0.9300	**4th**
The availability of medical and laboratory supplies in the hospital all year round	0.9233	**5th**

Source: Field Survey, 2015

The above findings imply that the procurement unit of the hospital is effective in managing its lead time and also confirms Brennan (1998) found to the effect that better SCM and procurement lead

time management can achieve substantial savings while drastically improving the speed and quality of the service if they redesign their supply chain. The above findings are also highly critical because running out of stock especially in a hospital mean loss of lives and there is therefore the need to have an effective procurement department that has the know-how and the adequate resources to ensure that vital supplies are always in stock.

Moreover, the above findings imply that when effectively done, procurement lead-time can engender better health care delivery at hospitals. From the literature review, it was learnt that Medical and Laboratory support is critical for disease surveillance and control programmes (Elemuwa, 2010). For instance, before an outbreak, laboratory-supported surveillance allows early detection of cases and during an outbreak; cases are confirmed in the laboratory to assess changes in the etiological agent(s) to guide decisions about involvement and distribution of resources. Medical and laboratory supplies ensure management of cases cost effective and more directional (Elemuwa, 2010).

4.6 The Impact of Procurement Lead Time on Staff Performance and Overall Performance of the Hospital

This section presented the findings in relation to the forth objective of the study which is analyzing the impact of procurement lead time procurement lead time on staff performance and overall performance of the Hospital. It was found that the procurement lead time has a positive impact on the performance of the hospital's staff as well as the overall performance of the hospital. As illustrated in Table 4.9, the impact as per the degree of significance are as presented in the following order: (1) Enhanced the staff's ability to handle expected health demands and challenges (RII=0.9400); (2) Engendered better responsiveness to patients' requests at the hospital (RII= 0.9400); (3) Helped the staff in inventory planning and scheduling in the hospital (RII= 0.9367);

(4) Procurement lead time have lowered the cost of medical bills to patients (RII= 0.9367) and (5) Enabled the staff to deliver excellent healthcare services to patients in the hospital (RII= 0.9367); (6) Procurement lead time have improved the inventory management and performance of the hospital (RII= 0.9300) and (7) Shortened the lengthy procurement processes that are detrimental to the operations of the hospital (RII= 0.9300).

Table 4.9 The Impact of Procurement Lead Time on Staff Performance and Overall Performance of The Hospital

Factors	**RII**	**Rank**
Enhanced the staff's ability to handle expected health demands and challenges	0.9400	**1st**
Engendered better responsiveness to patients' requests at the hospital	0.9400	**2nd**
Helped the staff in inventory planning and scheduling in the hospital	0.9367	**3rd**
Procurement lead time have lowered the cost of medical bills to patients	0.9367	**4th**
Enabled the staff to deliver excellent healthcare services to patients in the hospital	0.9367	**5th**
Procurement lead time have improved the inventory management and performance of the hospital	0.9300	**6th**

Shortened the lengthy procurement processes that are detrimental to the operations of the hospital	0.9300	**7th**

Source: Field Survey, 2015

The above findings especially the ability of the procurement lead time to enhance the hospital's staff's ability to handle expected health demands and challenges implies that the hospital's management of the procurement function is efficient and this has translated into better lead time management and therefore facilitating the job of the hospital's staff. Again, the above findings as shown in Table 4.5 are highly significant in a healthcare facility. Responsiveness is the willingness to help customers and to provide prompt service (Parasuraman et al., 1985). This dimension emphasizes attentiveness and promptness in dealing with customers' requests,

questions, complaints and problems. This therefore implies that patients are better served when a key medical facility as the Koforidua regional hospital has an effective medical and laboratory procurement management since it translates into better health care delivery.

Overall, above findings (Table 4.9) have amply demonstrated the procurement function is effectively and efficiently managed at the hospital hence leading to efficiency in the hospital's procurement lead time management. These findings resonates what authors such as Nordas et al 2006) and Lewis and Roehrich (2009), found to the effect that lead time management engenders cost reduction, availability of stock all year round, staff satisfaction since they are able to meet demands of customers, better motivation since they are able to be more productive and that overall, lives are saved. Moreover, these findings further resonate with what Tetteh and Pharm (2009) found to the effect that the procurement and supply chain functions have an impact on the accessibility, affordability and adequacy of medical and laboratory supplies and these can in turn impact on healthcare delivery.

4.7 Ways of Improving on Procurement Lead Time at the Koforidua Regional Hospital

This section presented the findings in relation to the fifth objective of the study which is analyzing the ways of improving upon procurement lead time at the Koforidua Regional Hospital. As illustrated in Table 4.10, the solutions as per the degree of significance are as presented in the following order: (1) Developing good relationship with suppliers (RII=0.9500); (2) Sticking to public procurement acts (RII= 0.9500); (3) Motivating employees (RII= 0.9433);
(4) Avoiding single sourcing (RII= 0.9433) and (5) Outsourcing some services (RII= 0.9300).

Table 4.10 Ways of Improving on Procurement Lead Time at the Koforidua Regional Hospital

Factors	RII	Rank
Developing good relationship with suppliers	0.9500	**1st**
Sticking to public procurement acts	0.9500	**2nd**
Motivating employees	0.9433	**3rd**
Avoiding single sourcing	0.9433	**4th**
Outsourcing some services	0.9300	**5th**
Passing strict rules to curb corruption	0.9200	**6th**
Training employees in the procurement and supplies function	0.9167	**7th**

Source: Field Survey, 2015

The fact the developing good relationship with suppliers was identified by the respondents as the single most important solution to effective lead time management underscores the importance of supply chain collaboration in procurement management. This finding resonates with what

Hunja (2003) concluded to the effect that good relationship and collaboration among procurement partners is highly crucial in order to forestall long procurement lead times and which in this case can mean denial of essential medical supplies to patients. Again, the fact that sticking to public procurement acts is the second most important suggestion underscores the need for procurers in the public sector to be mindful of the requirements of the procurement law and operate within its confines if they are to avoid infringing the law and being penalized thereafter. Moreover, this particular finding emphasizes the need to for public procurers to be highly knowledgeable, skillful and experienced in the art of public procurement (Thai, 2001).

Furthermore, the findings as illustrated in Table 4.10 shows how much employee motivation is highly critical in the success of the procurement function. This means that the hospital must find means of motivating procurers to avoid losing them to the private sector where emoluments are relatively higher. It must be added that avoiding single sourcing and outsourcing some services as shown in Table 4.6 are equally important factors in shortening the lead time.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

This chapter finalizes the thesis and it comprises the conclusions and recommendations of the study.

5.2 Summary of the Study

The summary of the findings of this study were as presented below:

In relation to the first objective of the study, it was found that the main source of medical supply at the hospital is the central medical stores of MOH even though the hospital relies on other sources such as vendors and selected local/foreign manufacturing companies. It was also found that the number of inventory turns per year at the hospital was over 10 times and that the average procurement lead time for drugs and laboratory supplies at the hospital is between 1 – 4 weeks. It was further found that stock out occurs once a month in the hospital. In relation to the second objective of the study, it was found that the factors affecting average procurement lead time are effective need identification leading to prompt reordering of medical and laboratory supplies; adequate and timely release of funds to the procurement unit (financial factor); adequate knowledge of Ghana's procurement act (legal factor); motivating staff and seeking top management support (management factor); effective supplier selection (the reliability and capacity of suppliers).

In relation to the third objective of the study, it was found that generally, procurement lead time leads to product availability and that it has ensured on-time delivery/due-date performance in the

hospital; that procurement lead time has reduced the inventory costs of the hospital; that procurement lead time have resulted in performance improvement and better SCM in the hospital and that the procurement lead time has curbed the incidence of stock outs in the hospital. It was found in relation to the fourth objective of the study that the procurement lead time has a positive impact on the performance of the hospital's staff as well as the overall performance of the hospital.

5.3 Conclusion of the Study

Procurement lead time plays an essential role in the effective healthcare delivery of any country. Life is very important and once lost can never be regained. It is imperative therefore, that health institutions charged with the mandate of not only saving lives but enriching it, meet the preventive, promotive, diagnostic, therapeutic and rehabilitative components of healthcare. The general objective of this research was to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. This study adopted the case study approach and by so doing was able to dig deeper into the subject matter to ensure that the objectives were achieved. The findings of the study seem to suggest that there is an efficient management of the procurement function and this has thereby resulted in an efficient lead time management at the hospital. This study therefore underscores the relevance of effective management of procurement in the realization of organizational objectives.

This study therefore concludes that the dynamic and harsh business environment of today requires that firms are able to have an efficient procurement lead time in place and that when effectively done, lead time can have a positive effect of key performance areas such as cost cutting, low stock out occurrences, staff motivation and commitment and customer (patient) and increased profitability. It is imperative therefore that top management of the hospital take a critical look at

its procurement function to ensure that there are no impediments to its quest to deliver first class healthcare services to its customers. This study further concludes that implementing procurement function requires better collaboration and communication with channel members and that channel members must also be trained and equipped with efficient MIS/ICT skills and equipment in order to ensure better collaboration, communication and ultimately, efficiency in lead time management.

5.4 Recommendations from the Study

Based on the findings of this study, the following recommendations were made:

5.4.1 Having Service Level Agreement

From the findings, it came out that the hospital does experience emergency orders due to stock outs about once a month. The management of the Koforidua regional hospital is thus recommended to have a service level agreement with its vendors and suppliers spelling out into details what are expected of them in terms of performance. When this is well documented, vendors and suppliers knowing well the ramifications of going contrary to the SLA will always perform to the exact specifications of their contracts. This will forestall the frequent emergency orders, stock outs and delays that the hospital suffers currently. Similarly, efforts ought to be made to guarantee that suppliers are mindful of the hospital's needs and lead-time plan for medical and laboratory supplies are requested or ordered in great time to evade pointless interruptions, holdups and patient dissatisfactions.

5.4.2 Understanding and Supporting the Procurement Function

It is also recommended that management of the hospital make efforts to not only understand issues of procurement management but also support the department to ensure better delivery.

Executive support can be in the form of time, fast improvement and release of funds.

5.4.3 Training of Procurement Staff

This study further recommends that the procurement employees of the hospital should regularly be trained and their skills upgraded since this will enhance their execution of the procurement function and will also help in accelerating the procurement process. It can also train employees of that department on the latest trends of supply chain management, especially so when the sector constantly sees new technology evolving. The management of the Koforidua regional hospital is further recommended to share information since this can eliminate all bottlenecks such as wrong orders and ambiguities.

5.4.4 Strong Relationships

It is also recommended that the management of the Koforidua regional hospital must forge a closer relationship with physicians in order to identify particular drugs that prescribe frequently and therefore work towards stocking these drugs and reducing those drugs that do not move fast. There should be promotion of integration through the use of state of the art information technology: appropriate structure for internal supply chain integration: promotion of integration through the use of state-of-art information technology: appropriate staff training and continuous reviews; installation of collaborative planning, forecasting and replenishment of tools and cutting off rigid government procurement policies and procedures.

5.4.5 Central Medical Stores

It is finally advised that the central medical stores should be able to use innovative procurement models like framework agreements to ensure uninterrupted availability of health commodities at the central warehouse.

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APPENDIX

MASTERS OF SCIENCE IN PROCUREMENT MANAGEMENT

(KNUST)

RESEARCH QUESTIONNAIRE

Dear Sir/Madam,

Synopsis

The purpose of this research is to assess the effect of procurement lead time on healthcare delivery at the Koforidua Regional Hospital. The research is also to contribute to existing knowledge on

the subject matter of procurement in your organization. It is expected that the outcome of this research will provide learning to the management of the Koforidua Regional Hospital in their procurement efforts. I would very much appreciate it if you could kindly provide answers to the questions to this questionnaire. I understand that all information provided will be used solely for the purpose of this research and treated strictly as confidential.

EDWIN ADINORTEY AGBUGBLA

MSc. Procurement Management Student

Mobile number- 0243350706

SECTION I (BACKGROUND OF RESPONDENTS)

Please tick where applicable in the box/space provided below:

1. Academic and professional qualifications

a. SSE and below [ ] b. B.Sc./HND holder [ ]

c. M.Sc./MBA or higher degree holder [ ]

d. Professional (Please specify): _____

2. What is your major role within this healthcare institution?

a. Director/ Chief Executive Officer [ ] b. Supply chain/ Procurement Manager [ ]

c. Pharmacist [ ] d. Store Manager/Distribution [ ]

e. Other……...

3. Working experience:

a. Less than 5 years [ ] b. 5 – 10 years [ ] c. above 10 years [ ]

SECTION II (THE AVERAGE PROCUREMENT LEAD TIME FOR ALL PROCUREMENT METHODS EMPLOYED BY THE HOSPITAL)

4. What are the sources of medical and laboratory supplies to the hospital?

a. Local/foreign manufacturing companies [ ] b. Vendors [ ]

c. Manufacturer's representative [ ]
d. From the Central Medical supplies of MOH [ ]

5. Roughly how many inventory turns do you experience in a year?

a. Less than 5 times in a year [ ] b. 5 - 10 inventory turns/year [ ]

c. More than 10 inventory turns/year [ ]

6. What is the average procurement lead time for drugs and laboratory supplies at the hospital?

a. Less a week [ ] b. 1week to 4weeks [ ] c. Over a month [ ]

7. Are Medical and laboratory supplies and equipment always delivered on time?

a. Always before time [ ] b. Always just on time [ ] c. Always delayed [ ] d. Sometimes never supplied [ ]

8. How often does the hospital experience stock outs?

a. Every day [ ] b. Every week [ ] c. Once a month [ ]

d. The hospital does not experience stock outs at all [ ]

9. How does the hospital calculate reorder point and the reorder quantity for its inventory?

a. Have a computer software application that calculates these quantities [ ]

b. It is done subjectively by an employee periodically [ ]

c. Relies absolutely on the availability of drugs at the CMS [ ]

SECTION III (THE FACTORS THAT AFFECT AVERAGE PROCUREMENT LEAD TIME)

Please kindly answer the following: by ticking appropriate answers of your choice

10. The factors affecting average procurement lead time in the hospital are:

a. Effective need identification leading to prompt reordering of medical and laboratory supplies

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

b. Adequate and timely release of funds to the procurement unit (Financial factor)

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

c. Adequate knowledge of Ghana's procurement act (Legal factor)

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

d. Motivating staff and seeking top management support (Management factor)

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

e. The ability to design unambiguous procurement specifications (Staff capacity)

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

h. Effective supplier selection (the reliability and capacity of suppliers)

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

SECTION IV (THE IMPACT OF PROCUREMENT LEAD TIME ON PRODUCT AVAILABILITY)

11. Availability of medical and laboratory supplies all year round

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

12. On-time delivery/Due-date performance

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☒ Agree ☐ Strongly agree

13. Reduces inventory costs of the hospital

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☒ Agree ☐ Strongly agree

14. Performance improvement and better SCM

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☒ Agree ☐ Strongly agree

15. Curbs the incidence of stock outs at the hospital

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☒ Agree ☐ Strongly agree

SECTION V (THE IMPACT OF PROCUREMENT LEAD TIME ON STAFF PERFORMANCE AND OVERALL PERFORMANCE OF THE HOSPITAL)

16. Enhances staff ability to handle expected health demands and challenges

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☒ Agree ☐ Strongly agree

17. Helps staff in inventory planning and scheduling in the hospital

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

18. Affect inventory management and performance of the hospital

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

19. Lowers cost of medical bills to patients

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

20. Engenders better responsiveness to patients' requests

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

21. Enables staff to deliver excellent healthcare services to patients

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

22. Lengthy procurement processes are detrimental to the operations of the hospital ☐

Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

SECTION VI (WAYS OF IMPROVING ON PROCUREMENT LEAD TIME AT THE KOFORIDUA REGIONAL HOSPITAL)

Please kindly answer the following: by ticking appropriate answers of your choice 23. Training employees in the procurement and supplies function

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

24.Passing strict rules to curb corruption

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

25. Motivating employees

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

26. Developing good relationship with suppliers

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

27. Outsourcing some services

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

28. Sticking to public procurement acts

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

29. Avoiding single sourcing

☐ Strongly Disagree ☐ Disagree ☐ Not sure ☐ Agree ☐ Strongly agree

THANK YOU FOR YOUR COOPERATION!!!!!!!!!!