



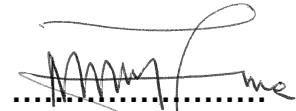
**ASSESSING THE IMPACT OF PROCUREMENT PROCESSES ON
AVAILABILITY OF MEDICINES AND MEDICALS SUPPLIES IN MALAWI: A
CASE OF CENTRAL MEDICAL STORES TRUST (CMST).**

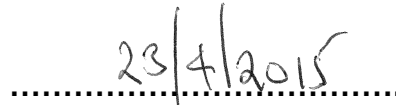
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SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE MSc DEGREE IN SUPPLY CHAIN MANAGEMENT
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DECLARATION

I, Tonny Marvin Mtama truly declare that this dissertation is my original work which has not been submitted to any institution of higher learning for the award of a degree. Again references made herein have been duly acknowledged.


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Signature


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Date

ACKNOWLEDGEMENT

I would like to extend my profound gratitude to all those who unceasingly helped me and in particular my Wife Lonthiar Mtama, my children Kelvin and Marvin and indeed my mum Mariette Mtama throughout the period of this dissertation. I particularly thank my supervisors Duncan Grant and Joanna Dilawo for guidance, support and knowledge. Thanks should also go to Febson Mwanguku for tirelessly providing direction and moral support. I also would like to thank all participants who participated in this study and taking part in answering the interview questions meant to solicit the data for this research. Hence, without this necessary information the completion of the dissertation would have not been feasible.

ABSTRACT

The study would like to assess the impact of procurement processes on availability of medicines and medical supplies in Malawi, a case of Central Medical Stores Trust (CMST). The participants selected for this study were 30 from health centres and hospitals in Malawi and 29 responded to the interview questions. The study used a simple random and purposive sampling technique to come up with participants to the study.

The data collected was analysed using thematic approach to look at trends. The results of the study reveal that the stock level of supply of medicines and medical supplies is not good. The majority of the participants interviewed said that stock level of supply was very low followed by those who said it was moderate. Most of the participants interviewed in this study said that CMST management lacked strategic planning and also poor quantification while some cited political interference and that the medicines and medical supplies had a short expiry date. The participants were further concerned that sometimes CMST recalls products but does not replace and this leads to many patients being returned and to buy medicines and other medical supplies to private pharmacies while some have said that the requested items are not supplied in full.

Again, most of the participants interviewed revealed that lack of medicines and medical supplies meant failing to give medicines to all the patients throughout the year and when products that did not match are returned CMST does not replace and this leads to stock outs. The participants in the study strongly said that there had no alternative of getting medicines and medical supplies while others said would place emergency orders. Moreover, most participants also revealed that good procurement will ensure constant availability of medicines all the time. Some have said that when products are not overstocked expiry is avoided and hence losses are reduced. Again when asked about the advantages of good procurement and inventory management of drugs, other participants revealed that potency of medicine can be maintained through good inventory management.

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LIST OF ACRONYMS

CMS	Central Medical Stores
CMST	Central Medical Stores Trust
CHAM	Christian Health Association of Malawi
GoM	Government of Malawi
HSWAp	Health Sector Wide Approach
MHS	Management Sciences for Health
MMS	Medicines and Medical Supplies
MoH	Ministry of Health
RFQ	Request for Quotations
WHO	World Health Organisation

CHAPTER ONE: INTRODUCTION

1.1. Introduction

Procurement is an important part of efficient drug management and supply and is an important procedure for all levels of health care institutions. Ombaka (2009) argues that an effective procurement process ensures the availability of the right drugs in the right quantities, available at the right time, for the right patient and at reasonable prices, and at recognizable standards of quality.

1.2. Background to the Problem

The Government of Malawi (GoM) formed Central Medical Stores (CMS), an arm of the government with a responsibility for three core activities; procurement, storage and distribution of medicines and medical supplies, to all government and Christian Health Association of Malawi (CHAM) hospitals and other health centres. CMS was under Ministry of Health (MoH). CMS's mission was to be the public choice supplier of uninterrupted good quality, safe, proven efficacious and affordable medicines and medical supplies. However, contrary to the mission statement there are reports of poor performance by the organization. There are reports of underperforming with reports on stock outs, under stocks and over stocks of essential medicines and medical supplies. There are also reports of pilferage of commodities, destruction of medicines and medical supplies worth millions dollars due to expiry and obsolescence. Chirwa (2012), indicated in his dissertation, the availability of medicine was at 33% in 2008 and 35% in 2009 representing a 2% improvement. Chirwa (2009) also noted that despite the stock outs, many products were expiring on the shelf, as a sign of poor inventory management.

As a solution to this, GoM decided to turn CMS into a Public Trust with the aim of giving it autonomy in carrying out its activities. CMS was then given a Trust Status through the Trust Deed in November 2011 and it became Central Medical Stores Trust (CMST). The purpose was to give the organization Financial and Management independence with the aim of improving its performance. CMST started operating independently in June 2012 when the Executive Management was elected.

1.3. Statement of the Problem

CMST was turned into a Public Trust with the same view, aimed at giving it independent decision making and therefore improve performance. According to National Health Management Information System routine data as reported by Lapukeni (2012) in his dissertation has shown that CMS faced erratic supply of essential health products in all health facilities. Internal Central Medical Stores stock reports have also confirmed the regular stock-outs for vital essential medicines. He further argued that the facilities had developed lack of confidence in Central Medical Stores leading to procurement of health products from the private suppliers usually at a prohibitive higher cost and thus confirming the erratic and unreliable nature of the supply chain system. Lapukeni's (2012) research findings at CMS have revealed the need to adopt third party logistics to improve efficiency whilst proposing internal systems strengthening as an exit strategy.

The researcher found it necessary to assess the availability of medicines and medical supplies after CMST was made independent taking into account Lapukeni's (2012) recommendations of 3PL. In view of the procurement processes suggested and meant to improve performance there is little that has been done to fully have the medicines and medical supplies available in health facilities despite making the CMST a public trust as a way of improving performance. Kasakura (2014) also argues in his article titled: "Drug Stock Outs likely to stay". The article doubted whether setting of CMST by government a few years ago would entirely change things for the better in public hospitals. Therefore, the study would like to assess the impact of procurement performance processes on availability of medicines and medical supplies in government and CHAM hospitals.

1.4. Aim of the Study

The aim of the research is to critically assess the impact of procurement performance processes on availability of medicines and medical supplies.

1.5. Research Objectives

The following are the objectives:

- To review relevant literature on the supply of medicines and medical supplies at CMST.
- To compare the current performance on supply of medicines and medical supplies at CMST with that previously found by Lapukeni (2012) research.
- To investigate reasons for change between the two studies.
- To make recommendations for improvement.

1.6. Research Questions

The following are research questions:

- What is the supply of medicines and medical supplies at CMST?
- How effective is the supply of medicines and medical supplies at CMST?
- Are there changes which have been observed at CMST? If yes, give an explanation for these changes.

1.7. Significance of the Study

The study will help management to consider streamlined processes and independent decision making by the organization to reduce procurement cycle time and therefore reduce lead time. Unique resources like; adequate finances, skilled human resources and ideal warehousing facilities are underpinning elements for any organization to run effectively. The findings from this study will help formulate strategic plans that will help to minimize these problems so as to ensure constant and uninterrupted supply of medicines in the hospitals. Again, CMST will benefit in this study as the considered recommendations will help speed up the procurement of medicines and subsequently their availability in the hospitals.

1.8. Format of the Study

Chapter one covers topics such as background of the study, the problem statement, research objectives and research questions. In addition the significance of this research study has been covered.

Chapter two provides relevant literature to the topic under study.

Chapter three covers the research methodology used the population, sample, research design, and instrument for data collection as well as how data will be collected.

Chapter four outlines the results, discussion and interpretation of findings of the study.

Chapter five gives conclusions and gives recommendations.

1.9. Conclusion

The supply of medicines needs to be managed efficiently in order to prevent all types of wastage including overstocking, pilferage and expiry. This wastage reduces the quantity of medicines available to patients and therefore the quality of health care they receive. Both under stocking or overstocking and expiry of medicines highlight problems within the supply chain activities which include selection, quantification, procurement, storage, distribution and use. The foregoing chapter has covered the introduction, discussed the background information to the problem statement, research objectives, research questions as well as the significance of the study to CMST.

Chapter Two which follows covers relevant literature review on the topic understudy.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Churchill and Iacobucci (2002) state that literature search or review naturally depends on the problem being addressed. The researcher would like to assess the availability of medicines and medical supplies at CMST, and the researcher would therefore review the literature on previous researches carried out on the performance of the old CMS and compare with the present situation.

2.2. Definition of Terms

a. Procurement

Procurement refers to the process by which a health system acquires the selected medicines (.Gordon 2010)

b. Purchasing-The activity of acquiring goods or services to accomplish the goals of an organization. (Ombaka 2009)

c. **Logistics Management** - Logistics management is a supply chain function that plans, implements, and controls the efficient, flow and storage of goods, services to meet customers' requirements. Logistics management is an integrating task that coordinates all logistics activities, as well as integrating these activities with marketing, operation management, finance, and information technology Council of Supply Chain Management Professionals (CSCMP 2011, cited in Odoom 2012).

d. **Supply Chain Management**-Supply chain management focuses on the management of supply chain activities to help to take advantage of customer value and attain a sustainable competitive advantage. It represents effort by supply chain firms to develop and run supply chains in the most effective and efficient ways possible. Supply chain activities focus on product development, sourcing, production, and logistics, as well as the information systems needed to coordinate these activities. (Handfield 2011,cited Odoom,2012)

e. Third Party Logistics (3PL), The3PL (third-party logistics) is a provider of outsourced logistics services. Logistic services encompass anything that involves management of the way resources are moved to the areas where they are required.

f. Availability

Availability is the capacity to have inventory when desired by a customer. As simple as this may seem it is not at all uncommon for an organisation to expend considerable time, money and effort to generate customer demand and then fail to have products available to meet customer requirements. It should be clear that achieving high levels of inventory availability requires a great deal of planning (Ombaka 2009)

g. Storage

Proper storage on inventory is vital .Improper storage can cause a product to ruin, resulting in a loss of inventory and money.

h. Operational performance

Operational performance deals with the time required to deliver a customers' order. Whether the performance cycle in question is market distribution, manufacturing support, or procurement, operational performance is specified in terms of speed of performance, consistency, flexibility and malfunction recovery (Odoom 2012).

According to Lapukeni(2012) there are many steps in the procurement process and no matter what model is used to manage the procurement and distribution system, efficient procedures should be in place: to select the most cost-effective essential drugs to treat commonly encountered diseases; to quantify the needs; to pre-select potential suppliers; to manage procurement and delivery; to ensure good product quality; and to monitor the performance of suppliers and the procurement system. Failure in any of these areas leads to lack of access to appropriate drugs and to waste.

Procurement is not simply the act of buying but encompasses a complex range of operational, business, information technology, safety and risk management, and legal systems, all designed to address an institution's needs (Ombaka 2009). Specifically, management of medicines procurement determine, accredit, and monitor appropriate supply sources; evaluate suppliers' performance; choose a buying strategy or

approach; monitor drug delivery; assess clinical and use outcomes; and evaluate new products and the drug market. Successful hospital procurement is also a collaborative process, involving people with skills in purchasing, finance, management, clinical and nursing specialties, pharmacy, quality control, and even the end user: the patient(Ombaka,2009).

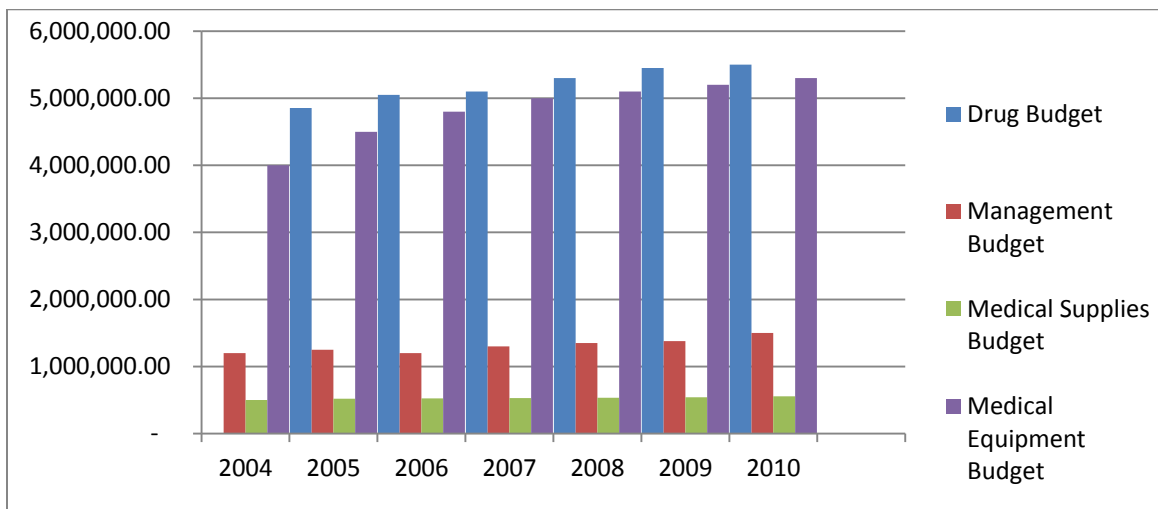
While different national procurement models exist across developing countries, procurement of essential medicines to serve many of these populations remains largely centralized in the Ministry of Health and/or a Central Medical Store (CMS) and relies heavily on public monies, international funding mechanisms, and donor funding World Health Organization (WHO 2011). These public entities often lack the technical capacity to efficiently and strategically carry out the procurement process. Inadequate planning and forecasting, use of archaic procurement methods, and tendering yearly or multiple times a year contribute to high commodity costs, long lead times, stock imbalances, and, overall, commodity insecurity(WHO 2011). Indeed, across all WHO regions, the mean availability of selected medicines is consistently lower in the public sector than in the private sector (Cameron A, Ewen M, Ross-Degnan D, Ball D, Laing R 2009,p.373).

2.3. Central Medical Stores Performance Before Becoming A Trust

According to Mmana (2011), procurement audit reports for 2010 at the Malawi Ministry of Health headquarters which controlled the single government instituted supplier namely Central Medical Stores (CMS), uncovered irregularities in the procurement of medicines that consequently resulted in Health Sector-Wide Approach (HSWAp) pool partners withholding funds meant for the procurement of medicines until the situation was rectified. This and other challenges external to hospital procurement functions 'can directly affect the downstream customer (the patient) in public hospitals (Miocevic2011 cited by Kanyoma & Khomba 2013).This meant that CMS could not have sufficient inventory of medicines and could therefore hardly meet the drug requirements of public hospitals. This also meant that CMS was going to fail to procure and supply medicines and other medical supplies because of inadequate funding which subsequently would affect the patients in the hospital in dire need of the items. Hence, there was an urgency need for CMST with government to improve the situation at hand.

As earlier explained in the background to the study, the entire supply chain process should ensure uninterrupted supply of health products in all the health facilities. Currently, according to Lapukeni (2012) the supply chain shows serious flaw, leading to intermittent supply to delivery sites and this is further highlighted below. The evidence of this continuous shortage of health products is abundant as evidenced by the inability of the supply chain system to use the entire amount of the national budget for medicines and medical supplies. At CMST there was acute shortage of the supply of health products and this supply chain flaws affected the entire health sector leading to would be patients seeking medicine in private pharmacies.

Graph 1: Showing Resources Allocation for Central Medical Stores 2004-10 budget in Malawi Kwacha (MK)



Source: Health Sector Wide Approach Financing (2010)

2.3.1. Persistent Stock- outs

Though Graph 1 shows increased resource allocation by Health Sector Wide Approach Pool partners including Government, Central Medical Stores failed to translate this and utilize the resources leading to continuous stock outs (Lapukeni 2012). National Health Management Information System routine data showed erratic supply of essential health products in all health facilities. Internal Central Medical Stores stock reports confirm the

regular stock-outs, also for vital essential medicines. According to Lapukeni (2012) the facilities had developed lack of confidence in Central Medical Stores leading to procurement of health products from the private suppliers usually at a prohibitive higher cost and thus confirming the erratic and unreliable nature of the supply chain system. The lack of having good supply chain process has failed CMST and left most hospitals and other health centres with a shortage of health products.

Central Medical Stores (CMS) as known in low-income countries are usually the backbone of public health procurement and distribution models (Yadav, Tata, & Babaley 2011). These CMSs have traditionally been completely government-owned enterprises; but, more recently, they have been given management autonomy, with government oversight (Drug Supply Choices: What Works Best? 1998 cited in Watson & McCord 2013). The roles of the CMS have generally included the national procurement of healthcare commodities, storage and handling of inventory commodities, and distribution to various sections of the national public health system; and, in some cases, the private-sector health system. Although, conceptually, these models have all the necessary components for a supportive supply chain for healthcare delivery; in practice, CMSs are often characterized by inadequate performance in areas, such as procurement, financial and logistical management, security, and storage (Govindaraj & Herbst 2010, cited in Watson & McCord 2013).

In Benin, the Central Medical Store (CAME) lacked the storage capacity to handle the volume of products purchased by various healthcare service collaborators; as a result, poor stock management practices occurred (Ndoye et al. 2009 cited in Watson & McCord 2013). In 2001, poor functioning by the CMS in Ghana was cited as the cause of shortages of essential drugs and supplies; improvements in availability during the next two years was more attributable to access to the open market than to improvements at the CMS (EGEVAL 2005, cited by Watson and McCord 2013). In some cases, prices at the CMS were higher than the open market. In Malawi, one deterrent to successfully providing an essential health package is the inability of the CMS to quantify need and hold adequate buffer stock (Mueller et al. 2011). In addition,

in Malawi, high profile cases of theft and corruption at the CMS have resulted in donors withholding funds meant for the health sector (Ngozo 2011).

Many examples of CMS strengthening efforts do exist. In Tanzania, the performance of the CMS improved after a systematic approach to management, supply monitoring, and documentation (Wiedenmayer 2000). Using multidisciplinary training and procurement policy changes, the Association of Central Medical Stores for Essential Drugs (French acronym, ACAME) improved the performance of national CMSs in many Francophone African countries (Millot2006, cited in Watson & McCord 2013). Mwangonde (2013), in his dissertation stated that donor partners then stopped giving Malawi CMS financial support and promised to resume aid only if CMS was turned into a Public Trust.

Ombaka (2009) argues that when procurement is conducted without a systematic process, it often leads to unacceptable outcomes. According to him, the operational principles of a good procurement process are the backbone of any medicines procurement. These principles ensure the selection of the most cost effective essential drugs to commonly encountered diseases and that the quantification, supplier selection, delivery schedule, product availability, quality, and supplier performance are correct and properly monitored (Ombaka 2009).

Therefore, an effective procurement process at any level must ensure that four strategic objectives are achieved (Ombaka 2009);

- The procurement of the most cost effective drugs in the right quantities;
- The selection of reliable suppliers of high quality products;
- Procurement and distribution systems that ensure timely and undisturbed deliveries and processes that ensure the lowest possible total cost (WHO 2008, cited by Ombaka,2009).

Kachieng'a & Ogara(2004) cited Zamboko, Tripathi & Kamuzora (2012) reviewed the processes of equipment planning, procurement and management in public hospitals in Kenya and South Africa. They observed that procurement and management of health equipment required change in the approach, as it affects the quality of the healthcare services. Studies on medical equipment procurement in African region indicate the

technical expertise of the tender-board members remain a matter of concern and thus, affecting both the cost and quality of medical-equipment procurement management process (Ncayiyana 1997; Kachieng'a 1998 cited in Zamboko, Tripathi & Kamuzora 2012).

A different factor for the shortage of medicines and medical supplies could be unavailability of skilled and enough staff at the CMS. In a study undertaken in 2008 by USAID it was found that CMS had no skilled and enough staff which affected its supply chain management (Mabveka 2013). This meant that it had no adequate capacity to undertake procurement activities which includes procurement planning and management of the procurement process. Therefore, as put by (Mabveka 2013) there were high chances that the procurement that was undertaken in 2009 was poorly planned which resulted into the shortage which was there by then. For instance, instead of planning for a framework agreement with the successful bidders, the CMS may have entered into a one-off contract. This meant that the CMS had to restart the procurement cycle within a short period of time after just concluding another one (Mabveka, 2013). In addition, due to understaffing or being staffed with unskilled staff, the bid preparation could have been affected. In this case the first instance could be that the bidding documents took a long time to be finalised or the bidding document had many mistakes which led to many bidders seeking clarifications which resulted into addendums. The addendums that largely affect the preparation of bids by suppliers resulted into extended bidding period. Therefore, availability of appropriate human resource does negatively affect a procurement process.

Mabveka (2013) had also pointed out that mismanagement of funds could be another form in the way on how the contract payments were done. It could be possible that payments for the yet-to be and delivered medicines and medical supplies were not made per the contract agreements, hence affecting the procurement of drugs. For instance some contracts could require upfront payments but they were not made. This could have been the case either because the funds were not transferred from Treasury or were used for other things. According to Mabveka (2013) the former case could happen where the political masters may have directed that the funds be made available for other expenditures rather than the one they were planned for at that time. In case

where the suppliers were not paid their up-front payments, the suppliers could not deliver/supply. In a different case where supplied medicines and medical supplies were not paid for, the suppliers could not be interested in submitting a bid when an invitation to be was made again (Mabveka,2013). As a result, it could have taken a long period to identify new reliable suppliers. This could force the CMS use the Request for quotation (RFQ) method of procurement which mostly target the third party suppliers, the so called middlemen in medicines and medical supplies business.

In reference to the foregoing, the CMS had to ensure that it enters into contracts with suppliers in a form of contract that will be in tandem with the time it took to identify them. In addition, considering that it deals with goods which are critical in nature for saving the human life the best type of contract that CMS could have been entering into with successful bidders is framework agreements. This could mean the suppliers supply the medicines and medical supplies more than once. In this way, the CMS would ensure that there was a continuous supply of medicines and medical supplies (Lapukeni 2012).

There are many forms corruption takes in procurement which include patronage system. Patronage takes place when local public office holders among other things grant favours, jobs and contracts in return for political support. All these are done in disregard of formal rules at the expense of personal channels (Andvig *et al.*, 2001 cited in Mabveka, (2013). They further argue that procurement fraud does happen when both the public officers and politician choose to close their eyes on economic crimes, and it is serious fraud when they have an active role in it. Søreide (2002) (cited by Heggstad, K *et al.* (2010) and cited by Mabveka (2013) states: "*Corruption in public procurement makes the officials or the politicians in charge purchase goods or services from the best briber, instead of choosing the best price-quality combination*". The foregoing clearly shows that politicians do contribute to the occurrence of procurement corruption. This simply means that politicians do conflict and struggle with the legitimate primary players in the public procurement who happens to be public officer/officials, later alone other secondary players in the public procurement process.

The World Health Organization (WHO) defines access to medicine as a priority for citizens. It needs to be available at all times in adequate amounts, in appropriate dosage and quality and at an affordable price for individuals and communities (Marks, 2009 and Yadav et al., 2011 cited by Schopperle, 2013). The procurement and supply management function plays an important role in healthcare delivery. Failure by the function to safeguard the availability of supplies can sabotage the very interests of the organization which the function is supposed to support (Kumar, Ozdamar & Zhang 2008). Therefore, to ensure that people have access to essential medicines and to preserve the quality of the medicine, a functioning medicine supply chain is necessary, which includes procurement, appropriate warehousing and efficient transportation (Yadav et al., 2011).

2.4. Procurement Process

According to MSH (Management Sciences for Health, 2012 cited by Whitney 2014), “An effective procurement process seeks to ensure the availability of the right medicines in the right quantities, at reasonable prices, and at recognized standards of quality.” As such, procurement includes forecasting required drug quantities, setting production quality standards, choosing suppliers, comparing price quotations, and paying for the drugs.

Procurement practices are used in the logistics and supply chain industry to support operational needs of the company by focusing on how purchasing is done, how the product is received from suppliers, building relationships with vendors and managing the procurement process by identifying opportunities and managing internal operations (Fantazy, Kumar, & Kumar, 2010, in Odoom, 2012). In today’s procurement environment, importance has been placed on reducing costs during purchasing which leads to the best costs and value to its customers

Procurement is the business management function that ensures identification, sourcing, access and management of the external resources that an organisation needs or may need to fulfil its strategic objectives (CIPS, 2005) Comparing with purchasing from supply chain management perspective, procurement emphasizes on relationships between

buyers and sellers and is in a higher, strategic level activity (Bowersox et al., 2002 , p.73). Bowersox et al. (2002, p. 74), discussed procurement perspectives mainly as:

a. Continuous supply

Production should be ensured with continuous material supply. Production stoppage increased operation costs and results in an inability to provide finished goods or service to customers.

b. Minimize inventory investment

Modern procurement is to maintain supply continuity with the minimum inventory investment possible. This requires balancing the costs for carrying excessive material against the possibility of a production stoppage. The goal could be to make materials to arrive before the scheduled production.

c. Quality improvement

Procurement can play a critical role in the quality of a firm's products or services. When used materials and parts are of poor quality, the finished goods quality will not satisfy customer requirements. Quality improvement through procurement also impacts on costs in the firm by scrap and rework in the production.

d. Supplier development

Successful procurement depends on locating or developing suppliers, analysing their capabilities, and selecting and working with those suppliers to achieve continuous improvement.

According to Kanyoma & Khomba (2013) an effective supply chain is characterized by the timely, reliable movement of health commodities and data up and down the supply chain: from the service delivery point (such as health posts, clinics, and hospitals where health commodities are dispensed) to the district, regional, and national levels and back. Indeed, data from the service delivery points are the most relevant for supply chain managers to make informed decisions of how much, and what type of health commodities should be delivered (Kanyoma & Khomba, 2013).

According to Lapukeni (2012) in his dissertation pointed out that the sustained availability of medicines and medical supplies is crucial if quality health care service is to be achieved. He further pointed out that ensuring a sustained availability of these health products in the health service delivery points in the country requires ***proper quantification, forecasting, procurement process, appropriate warehousing and effective distribution strategies***. In this regard the (CMS) under the policy direction of the central Ministry of Health was responsible for uninterrupted supply of these products. Therefore, the CMS had a role to play in making sure that there was effective supply chain management for pharmaceutical and related health products.

For example, in Uganda, as put by Zamboko, Tripathi & Kamuzora (2012) The National Medical Stores (NMS) on many occasions failed to provide quality services in procurement, storage and distribution of medical supplies due to;

- Lack of planning both at the policy level and within the National Medical Stores,
- Inadequate supervision and control mechanisms leading to commodity losses,
- De-motivated, poorly trained and undisciplined work force,
- Unstable funding and
- Bureaucracy .

This has led to inefficiencies in the National Drug supply system, resulting into inadequate supply of appropriate medicine supplies at health facilities throughout the country. (Logistics support - a publication of the Regional Centre for Quality of Health Care, 2000 cited by Zamboko, Tripath and Kamuzorai, 2012).

The procurement capacity at CMS Malawi is quite limited and affects to a greater extent the efficiency of the supply chain Lapukeni (2012). The proposed strategic procurement interventions such as 3PL herein was aimed at ensuring that there is sustained and efficient integrated supply chain within CMS. Martin (1998) cited by Lapukeni (2012) observed that to achieve this, organisation wide supply chain integration, clearly requires a quite different orientation than that typically encountered in the conventional

organisation. The proposed strategy was establishing of supplier buyer relationship as well as strengthening internal systems such as warehousing and distribution. Therefore, if CMS was able to bring forward these strategic procurement interventions, the supply and distribution of medicines to health facilities was likely to improve. This will further lead to improvement in terms of availability as well as affordability of medicines and medical supplies. Proper organization, availability and affordability are crucial in making sure that pharmaceuticals are available in abundance in the health facilities.

2.5. Supply Chain Management (SCM) Systems

Supply chain management is part of a well-functioning health system. In strong health systems, supply chains respond to the requirements and goals dictated by the broad public health institution, operational environment, and society in which these supply chains operate. The healthcare supply chains are said to be more complex and more immature compared to other industries (Beier, 1995). This can be explained by different reasons. First, supply chain management has an impact on human health requiring adequate and accurate medical supply conforming to the patients' needs (Beier,1995). If medical supplies are out-of stock, distributed to the wrong patient or are prepared inadequately, patients may experience adverse events, and in some cases death (Mustaffa & Potter, cited by Kanyoma & Khomba, (2013).Integrated supply chains have collateral benefits for a health system. A cohesive, well-performing public health supply chain helps build the foundation for a strong pharmaceutical management system, provides essential information for managing health programs and financing mechanisms, and helps to achieve the level of accountability exemplified in the commercial sector.

It can be argued that a well-functioning medicines supply management system is vital in assuring an uninterrupted supply of essential medicines that are efficacious and of good quality, physically and financially accessible and used rationally. Carrying out an in-depth assessment of the system provides information for targeted interventions in strengthening the system.

Therefore, the concept of supply chain is defined by Meijboom, Schimidt-Bakx&Westert (2011) as a way to envision all steps needed from beginning to end in order to deliver products or services to the customer. Supply chain management (SCM) on the other hand, involves the management of flows between and among stages in a supply chain to maximize total profitability (Sila et al, 2006; cited by Kanyoma & Khomba,2013) and customer satisfaction (Danese and Romano, 2011, cited in Kanyoma & Khomba,2013). The procurement function occupies centre stage in managing supply chains. Juha and Pentti (2008) cited by Kanyoma & Khomba (2013), the function determines availability, cost, and quality of materials as well as responsiveness and flexibility of organizations in meeting customer needs and expectations. In recent years, various articles have noted the strategic importance and competitive potential of procurement or the purchasing and supply management (PSM) function (Gonzalez-Benito, 2007; Ogden et al., 2007 cited by Kanyoma &Khomba, (2013).

The significance of SCM is further emphasized by Mustafa and Potter, cited in Kanyoma and Khomba (2013) when they noted that within the healthcare industry, procurement operations associated with pharmaceutical products can affect the standard of care for patients. They contend that effective management of the function can ensure that both service level and cost objectives are met. Similarly, Kumar et al., (2008) suggest that procurement practices affect inventory levels and ultimately the service provided to the consumer or patient in the case of hospital. There is high risk therefore, that erroneous decisions in SCM can culminate into stock-outs (White and Mohdzain 2009 cited in Kanyoma & Khomba 2013) and total failure of healthcare delivery systems (Mustaffa & Potter, 2009, Kanyoma & Khomba 2013). Consequently, Kumar et al., (2008) rule out the feasibility of inventory elimination because medical supplies must be available for immediate use by medical professionals.

Inventory management does not mean keeping medical supplies without distributing them. The main motive of the inventory management is to see that the medical supplies are enough and if not there is need to be procure. Thus, proper procurement of the medical supplies and quick supply of them will help in the delivery of the health care services.

2.6. Supply Chain and Inventory Management

Effective inventory management in a supply chain can play a vital role in cutting inventory holding costs across the different stages of the supply chain, this is especially so in developing countries like Tanzania where budget for medicines are often tight. In a health facility overstocking of certain items may tie up a substantial portion of the medicine budget, leaving insufficient funds for other important perhaps lifesaving medicines (Wilson 2009). For this reason it is very important to control the building up of inventory. In addition to cost holding, excess inventory can lead to obsolescence and reduce an enterprise's flexibility (Wilson 2009). In case of a health facility excess inventory may lead to expiry of some medicines.

According to Lapukeni (2012) effective inventory management in a supply chain can play a vital role in cutting inventory holding costs across the different stages of the supply chain. He further says that holding, excess inventory can lead to obsolescence and reduce an enterprise's flexibility. In case of a health facility excess inventory may lead to expiry of some medicines. Inventory management is the art and science of maintaining stock levels of a given group of items incurring the least cost consistent with other relevant targets and objectives set by management (Mpwanya 2005). It is important that managers in organizations who deal with inventory, to have in mind, the objective of satisfying customer needs and keeping inventory costs at a minimum level. Lufesi et al (2007) cited in Lapukeni (2012) assert that inventory costs include holding costs, ordering costs and shortage costs.

The main aim of inventory management is to hold inventories at the lowest possible cost, given the objectives to ensure that there is uninterrupted supply for on-going operations. Therefore, when making decisions on inventory, management has to find a compromise between the different cost components, such as the costs of supplying inventory, inventory holding costs and results from insufficient inventories (Hugo, Badenhorst-Weiss & Van Rodyen, 2002:169)

In order to manage the various types of inventory, attributes of items first must be analysed in terms of cost, lead time, past usage, and the nature of demand (Benton,

2007,cited Wild,2002).In many purchasing situations, there are a number of different considerations conflicting with one another that influence the final purchasing decision. Improvement of drug inventory management can significantly decrease the expenditure in great amount.

Inventory control is the activity which organizes the availability of items to the customer. It co-ordinates the purchasing, manufacturing and distribution functions to meet the marketing needs. This role includes the supply of current sales items, new products, consumables, spare parts, obsolescent items and all other supplies (Wild, 2002, p.1)According to Wild (2002, p.7) the purpose of the inventory control function in supporting the business activities is to optimize elements such as customer service, inventory costs and operating costs.

The most profitable policy is not to optimize one of these elements at the expense of others. According to Wild (2002, p.7) the inventory controller has to make value judgement. If profit is lacking, the company goes out of business in the short term. If customer service is poor, then customers disappear and the company goes out of business in the longer term. Balancing the financial and marketing aspect is the answer hence the stock controller should have a fine judgement to make.

CSCMP (2011) cited by Odoom (2012) implies that supply chain management is successful when the goal of getting the right product to the right customer at the lowest costs is achieved. This is a situation that will give the highest level of service to the customer and higher competitive advantage to the company. Therefore, supply chain management touches on the mixture of different supply chain activities to help maximize a company's profit and total value.

2.7. Procurement and Delivery of Healthcare

Since services cannot be produced for storage like physical products, Meijboom, Schmidt-Bakx & Westert, (2011) cited in Kanyoma and Khomba (2013) note that providers adopt customer waiting as a remedy. However, as a result of the differences between healthcare and other services, long waiting times are not affordable in

healthcare systems because patient condition may worsen substantially during the waiting (Mustaffa & Potter, 2009 cited by Kanyoma & Khomba, 2013). This therefore calls to duty all functions including procurement which must ensure that medical supplies are always available. Meijboom, et al. (2011) cited by Kanyoma & Khomba (2013) have underscored the role of the procurement function in healthcare systems. They contend that 'simultaneity of production and consumption of services results in highly unpredictable and unique demand which is difficult to match with service capacity; hence the need for sufficient inventory. As Aronsson et al. (2011 cited by Kanyoma & Khomba) suggest, it really does not matter which dimension of performance measurements takes prominence (cost or customer satisfaction / healthcare quality), because both dimensions can be achieved through the PSM function. Such is the significance of the procurement function. Schopperle (2013) also adds that typical challenges within the national health systems which impact the supply chains include inadequate forecasting, insufficient funds, delays in funding disbursements and long lead times.

The CMST would only be efficient if it is able to get funding in good time so that it procures medicines in good time and distribute them promptly to hospitals and other centres for effective medical intervention. However, the funding challenges continue to have an impact on the supply of drugs by CMST since it operates on thin budgets.

2.8. Factors Affecting Procurement Processes

a. Overstocking

Consequently, the long-term effects of overstocking may become as expensive as the effects of under stocking where both scenarios lead to service unavailability and death of patients (Mustaffa & Potter 2009, cited by Kanyoma & Khomba 2013). The implication of rising expenses in the long run will either be reflected in fewer beneficiaries accessing free healthcare services at public hospitals, or more tax payer funds being spent on healthcare delivery (Chandra et al., 2009 cited by Kanyoma & Khomba 2013). It is adequately important for CMST to procure medicines and medical supplies which will be enough to avoid the expiry of some of the drugs in the health care delivery.

b. Forces External to Procurement

Further challenges come as a result of forces external to procurement. On this, Vries (2010) argues that inventory management decisions for hospitals are often made by many stakeholders who have conflicting interests. He notes that such decisions often seem to be more politically and experience-based rather than data-driven and potentially affect availability. Regardless of the interests of policy makers, Pan & Pokharel (2007) cited by Kanyoma & Khomba (2013) advise that it is prudent that some minimum stock of medical supplies be kept. Similarly, Vries (2010) encourages managers to clearly understand how inventory systems are affected by specific hospital characteristics, in order to improve healthcare inventory management. It is equally true that some policy makers and other political motivated individuals will politicize procurement of drugs for their own agendas which might put CMST in a quandary. It is important therefore for CMST to consider keeping medicines and medical supplies which will help in case of inadequate funding.

c. Logistics in the Supply of Medicines and Medical supplies

Tetteh & Pharm (2009) cited in Kanyoma & Khomba (2013) has opined that the state of drug supply chain affected availability, affordability and acceptability dimensions of medicines access. They suggest that failures of in-country supply chains to operate effectively and efficiently can erode all the success achieved in earlier stages of the supply chain. Lengthy public distribution systems have also been identified by Tetteh & Pharm (2009) cited in Kanyoma & Khomba (2013) as one factor affecting availability of medicines and therefore healthcare delivery. They note that such situations are common where distribution systems involve delivering of drugs to central warehouses, wherein they are then transferred to regional and district warehouses before being delivered to health facilities. Such chains of non-value adding and time consuming activities comprise what Taiichi Ohno, in Bailey et al, (2005) refers to as 'the waste of unnecessary movements'. Tetteh & Pharm (2009) cited in Kanyoma & Khomba (2013) precisely indicate that these lengthy distribution systems, coupled with lack of extensive information systems are responsible for frequent drug stock-outs and shortages in African nations.

d. Accountability

Accountability is government's obligation to demonstrate effectiveness in carrying out goals and producing the types of services that the public wants and needs (Segal and Summer 2002 cited by Ngugi & Mugo,n.d). Lack of accountability creates opportunities for corruption. Brinkerhoff (2004) cited by Ngugi & Mugo (n.d) identifies three key components of accountability, including the measurement of goals and results, the justification or explanation of those results to internal or external monitors, and punishment or sanctions for non-performance or corrupt behaviour. Ngugi & Mugo(n.d) point out that there are many strategies which help increase accountability and these include information systems which measure how inputs are used to produce outputs; watchdog organizations, health boards or other civic organizations to demand explanation of results; performance incentives to reward good performance; and sanctions for poor performance.

e. Ethics

According to Wee (2002) cited in Ngugi and Mugo(,n.d.) ethics are the moral principles or values that guide officials in all aspects of their work. Ethical behaviour encompasses the concepts of honesty, integrity, probity, diligence, fairness, trust, respect and consistence. According to Wee (2002) cited in Ngugi & Mugo(n.d) ethical behaviour includes avoiding conflicts of interest, and not making improper use of an individual's position. Therefore, ethical behaviour is important in public procurement as it involves the expenditure of public money, and is subject to public scrutiny (Ngugi &Mugo,n.d). Public officials should always behave ethically and fairly, including in their business undertakings. Ethical behaviour supports openness and accountability in a procurement process and gives suppliers confidence to participate in the Government marketplace (Ngugi &Mugo,n.d).

2.9. Proper Logistic System

According to Gordon (2010) a quality and sound logistic system supplies would ensure the safety and efficacy of the products by routinely checking for quality throughout the

procurement and distribution process. He further opined that clear and comprehensive product specifications are the first step in quality assurance followed by routine sampling and testing during manufacture and upon receipt. Subsequently the distribution system provides quality assurance by tracking expiration dates and ensuring good storage and handling practices in order to have an effective, accessible and continuity of health care services Gordon, (2010).

According to the (WHO 2004), “Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford”. In this view, these medicines should be widely available and closely monitored (WHO 2004).The whole essence of having the CMST is to have medicines and other medical supplies in the hospitals and other centres to assist in the diagnosis and treatment of various diseases.

Since a full supply chain consists of interconnected yet distinct functions, inaccuracy, inefficiency, or weakness at any point may compromise the strength of the entire supply chain. A disruption anywhere along a pharmaceutical supply chain may ultimately cause a stock out, or unavailability of health commodities. Stock outs can cause patients to miss treatments, and may increase risk of mortality if the disruption persists (Ikoh, M. et al 2008, cited by Whitney, (2010). Other intermediate outcomes of poor supply chains include product expiration, theft, overstocking, under stocking, order errors, and political/legal blocking (Supply Chain Management System, 2009 cited by Whitney,2010).It is also imperative for CMST to maintain a pharmaceutical supply chain that will not be disrupted because if this happens then there will be stock-outs of medicines and medical supplies in hospitals which will mean patients in the hospitals and other centres dying and those who can afford going to seek the medicines in private pharmacies.

Wilson (2009) writes that, with the growing understanding of logistics management as an area of competitive advantage, logistics management still faces some problems because companies still consider logistic management functions as a separate part of their operations from other company activities. Another key principle of logistics

management is figuring out the competitive areas they need to focus on in their operations. Due to the continuous change in the logistics environment, it is important to take action promptly to fulfil customers' needs to help build and maintain customer value. Hence, only when logistics management strategies are based on the needs of the company, can they gain a competitive advantage (Gammelgaard & Larson, 2001 cited by Odoom, (2012).

It is therefore important for CMST to consider logistics environment to meet and fulfil customer needs. The efficient and effective logistics management will help in the continuous supply of medicines and medical supplies.

2.10. Conclusion

Procurement is a very essential but complex process that differs between countries based on funding sources, recipients and the regulations in place. Some of the procurement process challenges include lack of effective coordination and communication between stakeholders such as donors and government in funding, procuring and quantifying national needs. Besides, the lengthy and inflexible procurement procedures with very long lead times leading to frequent stock outs, such as long time lapses between tenders and deliveries, and inflexible supplier contracts. The chapter has therefore reviewed some literature regarding the topic under study.

The next chapter that follows outlines the research method used for this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

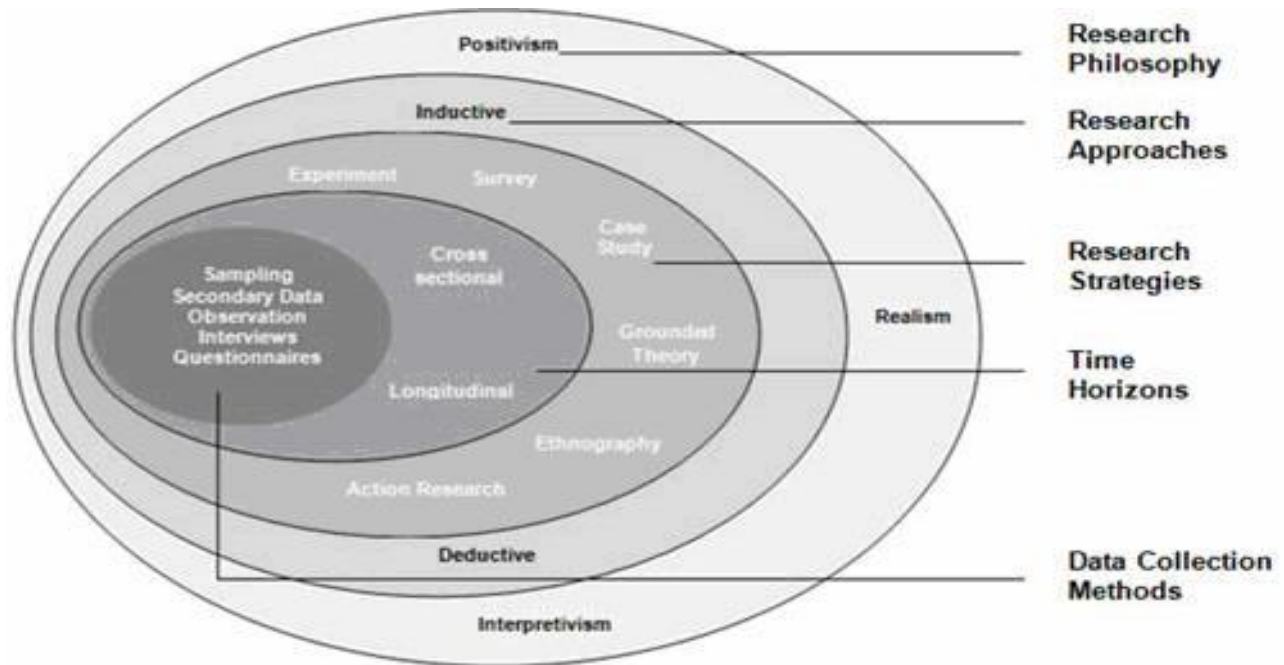
The chapter outlines the methodology which was used in this research study. Therefore information relating to research design, sampling methods, target population, and analysis of data has been given.

3.2. Research Methodology

Research methodology as put by Collis and Hussey (2003) is defined as an approach to the entire process of the research study. The two common approaches used in research are qualitative and quantitative. Creswell (2009:70) defines qualitative research studies are focused on differences in quality, rather than differences in quantity commonly used to go deeper into issues of interest and explore nuances related to the problem at hand. Common data collection methods used in qualitative research are focus groups, triads, dyad, in-depth interviews, uninterrupted observation, bulletin boards, and ethnographic participation/observation. Qualitative research is more exploratory thereby providing an opportunity to discover new issues but is however more prone to accusations of bias and personal subjectivity

Quantitative research according to Creswell (2009:70) focus on numeric analysis and statistics with the purpose of quantify the problem and understand how prevalent it is by looking for projectable results to a larger population. According to Bryman & Bell (2011) qualitative approach is used in interpretivism where there is need to generate or prove a theory. Therefore, considering the study and the type of data required both quantitative and qualitative approaches will be used.

Figure 3.1. Research Onion



Source: Saunders et al (2009)

3.3. Research Philosophy

According to Saunders et al. (2012:127) research philosophy relates to the way in which knowledge is developed and the nature of that knowledge. Business research methods are based on the philosophy of science and the theory of the society. Two research approaches exist, the positivist approach and the interpretivism approach and have been used in this research.

3.3.1. Interpretivism

This will be an interpretivism research. Bryman & Bell (2007) describe interpretivism philosophy as one which is concerned with the understanding of the human behaviour in social science. The researcher expects subjective responses because the answers to be provided would depend on the perceptions as whether the Trust has contributed positively or negatively to the availability of medicines and medical supplies.

3.3.2. Positivist Approach

The positivist approach also referred to as the quantitative approach is founded on a belief that the study of human behavior should be conducted in the same way as studies conducted in the natural sciences (Collis and Hussey, 2003:52). Welman et al (2011:6) contend that the positivist approach underlies the natural scientific method in human behavioural research and holds that research must be limited to what we can observe and measure objectively, which exists independently of the feelings and opinions of individuals.

3.4. Research Approach

There are two approaches that are used in research and these are deductive and inductive. Deductive research approach involves the testing of a theoretical proposition by employing a research strategy specifically designed for the purpose of its testing, while inductive approach is that which involves the development of a theory as a result of the observation of empirical data. Saunders (2003,p.85), has opined that every research will involve the use of theory, it may not be apparent during the research design but it is more explicit during presentation and findings. The deductive approach is biased towards natural sciences in which a cause and effect link is made between particular variables without an understanding of how humans interpret the social world. As such the research approach to be adopted for the study is inductive where a substantial theory review has already been developed but hypothesis will be tested and this will lead to the conclusion.

3.5. Research Strategy

There are a number of research strategies that a research may be able to employ, namely, experiment, case study, grounded theory, ethnography, survey and action research (Bryman 2004,p.84). Research design provides the glue that holds the research project together. For the purpose of this research a case study was chosen because it provides more realistic responses than a purely statistical survey.

3.6. Target Population

The target population of this study will be 100 individuals and will be drawn from health related institutions from the three regions of Malawi. This number covers all personnel working in hospitals and health centres from which a sample of 30 respondents has been drawn to be interviewed.

3.7. Sample of the Study

According to Singh (2007, p88) sampling frame is defined “as a subset of the population, which provides a broad and detailed framework for selection of sampling units”. A sample size is the number of participants in a study and in this case 30 respondents will be drawn from health related institutions. The individuals to be interviewed will come from health related institutions and will include clinicians, District Health Officers, Pharmacy Personnel and CMST Procurement and senior management.

3.8. Sampling Method

There are several methods that a researcher can make a selection from. Ghauri and Gronhaug (2005) opine that sampling methods are divided into probability and non-probability sampling. Examples of probability sampling include simple random, stratified sampling, cluster sampling and systematic sampling while non-probability examples include convenience, purposive and snowball sampling. This researcher used simple random and purposive sampling method to select a sample for this research study.

3.9. Sources of Data

Sources of data can be primary, secondary and even tertiary according to Saunders et al. (2009:23). The study used two forms of data; primary and secondary data as described in section 3.9.1 and section 3.9.2 below.

3.9.1. Sources of Primary Data

The study used some primary sources of data to answer the research questions. According to Gratton and Jones (2010:8) primary data is data gathered for the purpose of the research which can be collected through methods such as questionnaires,

interviews, etcetera. The primary data was collected using an interview guide (Appendix A).

3.9.2. Sources of Secondary Data

Secondary data is the data gathered through existing resources such as census, archives, etcetera (Gratton & Jones, 2010:8). The secondary data was obtained from monthly stock status reports from the health related institutions including CMST. This was meant to assess the stock outs, under stocks and over stocks so that a comparison regarding the current performance in the supply and availability of medicines can be done

3.10. Data Collection Instrument

Data was collected through structured interviews. Interviews are good because there is chance to build rapport and thereby increases chances of getting enough information by clarifying questions to the respondents when not clear(Khotari,2006). However, interviews are time consuming, while questionnaires either open or close ended are good because they are free from bias, time and cost effective considering that the researcher is an employee and time is one of the constraints (Saunders, Lewis, & Thornhill (2009).

3.11. Pilot Study

A pilot study of the research instrument was carried out to 5 participants in the selected health related organizations who were not part of the main study to test the flow of questions and validity and also assessing how respondents would answer the questions asked. Therefore, before the data gathering phase a pilot test should be done (Saunders et al 2009).

3.12. Data Analysis

There are several methods and tools that can be used to analyse the collected data. Data analysis is the process of analysing all the information and evaluating the relevant information that can be helpful in better decision making (Sivia& Skilling 2006). Data was analysed using Microsoft Excel and presented qualitatively and quantitatively.

3.13. Credibility of Qualitative Research

Lincoln and Guba, as cited by Trochim (2006), proposed four criteria for judging soundness of a qualitative research. The criteria are credibility, transferability, dependability and confirmability. Credibility involves establishing that the results of the research are credible or believable in the eyes of the research participants. Transferability is the degree to which the results of the research can be generalized or transferred to other contexts or settings and is the responsibility of the person transferring the results to a different context. Dependability requires the researcher to account for the ever-changing context within which the research is taking place by describing the changes that occur and how the changes affected approach of the study. Confirmability refers to the extent to which results of the research can be confirmed or collaborated by others. Confirmability can be enhanced in many ways, one of which could be through documenting procedures for checking and rechecking data throughout the study.

3.14. Ethical Considerations

Saunders et al (2009) defines research ethics as the appropriateness of behaviour in relation to the rights of those who become subject of your work or are affected by it. Ethical consideration should be made to ensure that participants have given informed consent that no harm comes to participants, that confidentiality and anonymity of participants be protected and that permission is obtained to conduct the survey (Saunders et al.2009).

3.14.1. Ensuring Participants' Informed Consent

The study ensured that participants composed all those concerned with the procurement process and were asked to give informed consent by providing sufficient information about the objectives of the questionnaire prior to their response. Further, the study explicitly asked respondents to physically tick in a "Consent box" indicating that they consented to participate in the study.

3.14.2 Ensuring no Harm Comes to Participants

Although no direct or indirect harm was anticipated to occur to participants of this study, all respondents were not required to indicate their personal information that could directly link to them. To ensure there is no abuse of information, the data collected were treated with utmost confidentiality and was not to be shared with other parties. Furthermore, the collected data was aimed for the academic research project only.

3.14.3 Confidentiality and Anonymity

Confidentiality and anonymity of the research participants were protected by ensuring that their identities were not disclosed on the questionnaire forms since participants were not required to give their names.

3.14.4 Ensuring that Permission was obtained

Some letters shown in APPENDIX A were written to the organizations where the respondents were to be drawn to seek permission from senior management in order to conduct this study.

3.15. Limitations of the Study

According to Bui (2009,p.144) limitations can be inherent to the research design, data analysis, time and resources, or a condition that was set by the researcher. This study encountered several limitations that need to be highlighted. Low respondent turnout rate since samples was to be from hospitals throughout the country and expected limited access as the reliable technique of administering a questionnaire was through phone calls. Again financial resources for transport to other hospitals which are within reach, limited access to information about previous studies on the CMST as well as time; working and conducting research at the time.

3.16 .Conclusion

The chapter has outlined the research methodology process the researcher followed in the study such as research design and methodology. The target population of the

research were all those concerned with the procurement process. In view of the research instrument, interviews were used as data collection instrument. The method was used because it allows probing. When the interview questions were formulated they were piloted to those who were not going to take part in the actual study. The research employed a case study method using an interview guide to purposively selected respondents. The data was collected from a sample of 30 respondents from a population of 100 people. The data collected was analysed using the Microsoft Excel and presented qualitatively. Finally, issues of reliability and validity concerning data collection instrument was done including ethical considerations for respondents. The purpose of the study was explained to the participants, and were assured on protection of identity and confidentiality.

Data analysis will follow in Chapter 4

CHAPTER 4: DISCUSSION AND INTERPRETATION OF RESEARCH FINDINGS

4.1 Introduction

The chapter discusses the results obtained from the study. As a qualitative study, an interview guide was prepared to get information from the sampled participants to the study. The data was analysed to give meaning as presented by the participants.

4.2 Response rate

A sample of 30 participants were considered but out of these 29 were interviewed. The participants comprised clinicians, District Health Officers from hospitals and health centers, Pharmacy Personnel, Procurement and CMST senior management.

4.3. Analysis of the Research Findings

The aim of the research was to critically assess the impact of procurement performance processes on availability of medicines and medical supplies. The study used qualitative research and the interview guide is found in the *Appendix A*.

4.3.1. The supply of medicine and medical supplies at CMST

The roles of the CMST have generally included the national procurement of healthcare commodities, storage and handling of inventory commodities, and distribution to various sections of the national public health system; and, in some cases, the private-sector health system. When the participants were asked on the stock level of supply of medicines and medical supplies the majority said that it was very low. The January 2012 monthly report drawn at CMST indicated that the availability of medicine was at 42% and in June 2012 was at 46% with a 4% improvement with stocks drastically falling in December 2012 about 23% representing a fall of 23% of the medicines and medical supplies available at CMST. It was earlier pointed out that ensuring a sustained availability of these health products in the health service delivery points in the country requires ***proper quantification, forecasting, procurement process, appropriate warehousing and effective distribution strategies***. This therefore shows that there is

no stability in view of the availability of the medicines and medical supplies. To make matters worse some participants felt that the requested items for their units did not match their specifications. For example Participant 15 alluded that “units were given wrong items than what was requested while Participant 10 said that “technical staff is not even involved in drug management at CMST”. Successful hospital procurement is also a collaborative process, involving people with skills in purchasing, finance, management, clinical and nursing specialties, pharmacy, quality control, and even the end user: the patient (Ombaka,2009). Besides, the majority felt that when the medicines and medical items were out of stock there was no alternative and this would result in the medical personnel prescribing drugs which could not match the disease or worse still being sent to go and buy the medicines in private pharmacies. Some participants have also mentioned the poor quantification and forecasting in the procurement of the medicines. Most of the health centres and hospitals depend on CMST for their medicines and medical supplies. The majority of the participants felt that if medicines and medical supplies were adequately available then people would not die from diseases that would be easily treated. It can be argued that it was important that CMST should be able to find out from the health centres and hospitals where drugs are supplied regarding the availability and checking expiry dates.

4.3.2. The current performance on the supply of medicine and medical supplies at CMST

The supply of medicines and medical supplies is very crucial in achieving health for all. When the question was posed to participants on how the lack of supply had affected the care provided, the majority of participants said that CMST was not supplying the units with the required quantities and sometimes not supplied at all. Inadequate planning and forecasting, use of archaic procurement methods, and tendering yearly or multiple times a year contribute to high commodity costs, long lead times, stock imbalances, and, overall, commodity insecurity(WHO 2011). Indeed, across all WHO regions, the mean availability of selected medicines is consistently lower in the public sector than in the private sector (Cameron A, Ewen M, Ross-Degnan D, Ball D, Laing R 2009, p.373).This

then lead to stock out of essential medicines and sometimes tell patients to go and buy. Again some participants said that sometimes quality is compromised and products change colour. Participant 21 said that “we always receive drugs with short expiry dates” while Participant 25 says “when orders are due it takes very long for CMST to deliver”. In cementation of these comments, the January reports indicate that the stocks fell further in 2013 to 19% on availability of medicines from 23% in December 2012. However, there was a slight percentage increase of 6% in December 2013 to 29% but fell again in January 2014 representing 23% though there was an improvement in December, 2014 to 61%. Thus this instability has led to stockouts in most health units. Lengthy public distribution systems have also been identified by Tetteh & Pharm (2009) cited in Kanyoma & Khomba (2013) as one factor affecting availability of medicines and therefore healthcare delivery. They note that such situations are common where distribution systems involve delivering of drugs to central warehouses, wherein they are then transferred to regional and district warehouses before being delivered to health facilities. These are some of the sentiments put forward by some of the participants during this study regarding the current performance on the supply of medicines and medical supplies.

Then, according to Lapukeni (2012) the supply chain showed serious flaw, leading to intermittent supply to delivery sites. The evidence of this continuous shortage of health products is abundant as evidenced by the inability of the supply chain system to use the entire amount of the national budget for medicines and medical supplies. In view of the forgoing argument quantification, forecasting, lead times and other activities are crucial in making sure that medicines and medical supplies are available in hospitals. However, as alluded by a number of participants it is clear that CMST continues to have problems which meant lack of availability of medicines and medical supplies in hospitals and health centres. From the observation of Lapukeni (2012) it shows that CMST was still finding problems in trying to gain confidence from the units in terms of supply of medicines and medical supplies. Some other participants have pointed out that good procurement systems gains confidence and that good procurement would ensure constant availability of medicines. Besides, when products are not overstocked expiry is

avoided and then losses are reduced. Mabveka (2013) had also pointed out that mismanagement of funds could be another form in the form of how the contract payments were done. It could be possible that payments for the yet-to be and delivered drugs and medical supplies were not made per the contract agreements, hence affecting the procurement of drugs. For instance some contracts could require upfront payments but they were not made. This could have been the case either because the funds were not transferred from Treasury or were used for other things.

As stock status reports have shown it is difficult to tell if CMST has enough medicines and medical supplies to supply to hospitals and health centres as shown by fluctuating percentages (**See Appendix C**). There are these falling percentages that make us wonder whether people get the treatment they are looking for or where do they get the treatment. Moreover, when the question asked to ascertain the time it takes for them to receive the medicines and medical supplies, the majority of participants mentioned between 3-6 weeks while some indicated 3-8 months. However, to receive the medicines and medical supplies it has to take 2 weeks for user units and not 3-6 weeks and to the CMST it is supposed to be within 16 weeks to receive from suppliers and not 3-8 months. In a study undertaken in 2008 by USAID it was found that CMST had no skilled and enough staff which affected its supply chain management (Mabveka 2013). This meant that it had no adequate capacity to undertake procurement activities which includes procurement planning and management of the procurement process.

The results have also shown that if the drugs are available the patients are treated with the right medication. Some participants also said that if the supply of medicines is adequate, it helps reduce costs because emergency procurement is expensive. In this view the majority of participants have argued that the supply of medicines and medical supplies was not good enough to warrant the units totally confidence in CMST.

4.4.3. Changes that have been observed at CMST in supply of medicine and medical supplies

According to Lapukeni (2012) the supply chain showed serious flaw, leading to intermittent supply to delivery sites and this is further highlighted below. The evidence of

this continuous shortage of health products is abundant as evidenced by the inability of the supply chain system to use the entire amount of the national budget for medicines and medical supplies. In view of the comparison with what is happening now it seems that there is no change at as the stock level of medicines and medical supplies at CMST still remains low as put forward by the majority of the participants sampled for this study. For instance, Participant 1 said “the Malawi Standard Treatment Guidelines is not updated regularly hence new drugs are not included on essential medicines list for CMST to procure”. In addition Participant 2 asserted that “political interference had an influence on procurement decision. Further challenges come as a result of forces external to procurement. On this, Vries (2010) argues that inventory management decisions for hospitals are often made by many stakeholders who have conflicting interests. He notes that such decisions often seem to be more politically and experience-based rather than data-driven and potentially affect availability. For example, the January 2012 monthly report as part of secondary data has shown that CMST had stocked about 2419 representing 42% while in January 2013 the stocked items were at 19%. The World Health Organization (WHO) defines access to medicine as a priority for citizens. It needs to be available at all times in adequate amounts, in appropriate dosage and quality and at an affordable price for individuals and communities (Marks, 2009 and Yadav et al., 2011 cited by Schopperle, 2013). This clearly shows that as the items are getting replenished there are not being replaced. Though this is the case some participants further felt that the delivery note in some cases never matched the actual stock being delivered and that there was mis-procurement of these medicines and medical supplies.

4.4. Conclusion

An effective supply management system is very important in making sure that medicines and medical supplies are available in most of the health units. When the participants were asked on the stock level of supply of medicines and medical supplies the majority said that it was very low. The majority of the participants felt that if medicines and medical supplies were adequately available then people would not die from diseases that would be easily treated. Some participants further felt that the

delivery note in some cases never matched the actual stock being delivered and that there was mis-procurement of these medicines and medical supplies. When the question asked to ascertain the time it takes for them to receive the medicines and medical supplies, the majority of participants mentioned between 3-6 weeks while some indicated 3-8 months. Again some participants said that sometimes quality is compromised and products change colour. When the question was posed to participants on how the lack of supply had affected the care provided, the majority of participants said that CMST was not supplying the units with the required quantities and sometimes not supplied at all. Besides, the majority felt that when the medicines and medical items were out of stock there was no alternative and this would result in the medical personnel prescribing drugs which could not match the disease or worse still being sent to go and buy the medicines in private pharmacies. Some participants have also mentioned the poor quantification and forecasting in the procurement of the medicines.

The following chapter presents the overall conclusions and recommendations of the study

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This section outlines a summary of the study as well as giving conclusions and recommendations based on the research findings discussed in the previous chapter. The mentioned areas herein are according to the objectives cited in Chapter One. The objectives are as follows:

- To review relevant literature on the supply of medicines and medical supplies at CMST.
- To compare the current performance on supply of medicines and medical supplies at CMST with that previously found by Lapukeni (2012) research.
- To investigate reasons for change between the two studies.

This chapter gives recommendations on how to improve the situation.

5.2. Findings from the Study

The results of the study have revealed that there is low supply of medicines and medical supplies.

5.3 Findings from Literature Review

This part outlines conclusions drawn from scholars regarding the procurement processes regarding the availability of medicines and medical supplies. Some scholars have pointed out that the availability of medicines and medical supplies is crucial for achieving quality health care service. Further literature has revealed that to ensure a sustained availability of the health products in the health service delivery in the country required proper quantification, forecasting, procurement process, appropriate warehousing and effective distribution strategies. Other scholars have argued that a number of public procurement activities continue to suffer from neglect coupled with poor co-ordination, corruption levels as well as failure of open competition and transparency.

In addition, some scholars have said that procurement processes lack well trained and qualified personnel who could manage procurement effectively and professionally. On the other hand bureaucratic systems of procurement have contributed towards unacceptable contract delays, increased costs as a result of delays which a larger population will perceive as slow, ineffective and often corrupt. It is equal important that procurement process should take a collaborative process with specialists playing a major role.

From the literature reviewed some scholars have found inadequate planning and forecasting, use of archaic procurement methods, and long lead times as elements affecting the availability of medicines and medical supplies. It has also been found that availability of medicines and medical supplies is high in private sector than in public hospitals and other health centres. The evidence of this continuous shortage of health products is abundant as evidenced by the inability of the supply chain system to use the entire amount of the national budget for medicines and medical supplies.

Moreover, the facilities which are hospitals and health centres have developed lack of confidence in Central Medical Stores leading to procurement of health products from the private suppliers usually at a prohibitive higher cost and thus confirming the erratic and unreliable nature of the supply chain system. A different factor for the shortage of drugs and medical supplies could be unavailability of skilled and enough staff at the CMST.

Søreide (2002) (cited by Heggstad, K *et al.* (2010) and cited by Mabveka (2013) states: "*Corruption in public procurement makes the officials or the politicians in charge purchase goods or services from the best briber, instead of choosing the best price-quality combination*". The foregoing clearly shows that politicians do contribute into to the occurrence of procurement corruption. This simply means that politicians do conflict and struggle with the legitimate primary players in the public procurement who happens to be public officer/officials, later alone other secondary players in the public procurement process.

Furthermore, some scholars have said that effective inventory management in a supply chain could play a pivotal role in trying to reduce the inventory holding costs across the different stages of the supply chain. In case of a health facility excess inventory may

lead to expiry of some medicines. It has been also argued that mismanagement of funds can also lead to problems in medicine and medical supplies by suppliers who might have affected by contract agreements, hence affecting the procurement of drugs. For instance some contracts could require upfront payments but they were not made. This could have been the case either because the funds were not transferred from Treasury or were used for other things and at the end having a thin budget for the essential drugs.

5.4. Findings from the Primary Research

The results of the study reveal that the stock level of supply of medicines and medical supplies is not good and the situation has not fully improved taking from the previous study by Lapukeni(2012).The majority of the participants interviewed said that stock level of supply was very low followed by those who said it was moderate. Most of the participants interviewed in this study said that CMST management lacked strategic planning and also poor quantification while some cited political interference and that the medicines and medical supplies had a short expiry date. As pointed in the stock status report, the decrease in percentages of the available medicine and medical supplies shows that nothing tangible has changed at CMST in terms of the procurement processes to have medicine in hospitals and other health centres. The participants were concerned that sometimes CMST recalls products but does not replace and this leads to many patients being returned and to buy medicines and other medical supplies to private pharmacies while some have said that the requested items are not supplied in full.

Again, most of the participants interviewed revealed that lack of medicine and medical supplies meant failing to give medicines to all the patients throughout the year and when products that did not match are returned CMST does not replace and this leads to stock outs. The participants in the study strongly said that there had no alternative of getting medicines and medical supplies while others said would place emergency orders other than open tender. Moreover, most participants also revealed that good procurement will ensure constant availability of medicines all the time. Some have said

that when products are not overstocked expiry is avoided and hence losses are reduced. Again when asked about the advantages of good procurement and inventory management of drugs, other participants revealed that potency of medicine can be maintained through good inventory management.

5.5. Conclusions

Procurement of medicines and medical supplies is one of the activities that are performed by CMST. If medicines are not procured well and not available in the hospitals and other health centres this may mean that the innocent patient who is also a tax payer may not get the required medicine for treatment. When some of these drugs have expired and have been recalled there is need for them to be replaced. In this way the budget of these health centres and hospitals will be maintained but if not then they would end up spending out of the budget. It is imperative that management of CMST ensures that medicines and medical supplies are not lacking in the hospitals and health centres.

5.6. Recommendations

- 5.6.1. There is need for the government to give CMST adequate funding. This will enable CMST to procure adequate medicines and medical supplies.
- 5.6.2. There is need to streamline the procurement process by revising and reducing the number of stakeholders.
- 5.6.3. There is also need for CMST to set priorities through consultations. This means that the CMST should consult different specialists in the medical field in order to procure medicines which are required.
- 5.6.4. There is need for regular review of Malawi Standard Treatment Guidelines.
- 5.6.5. Moreover, after recalling the medicines and medical supplies, CMST should make an effort of replacing them. When drugs and other medical supplies have been recalled either due to poor specification or expiry date there is need to replace them otherwise if not replaced there would be shortage that would be created.

- 5.6.6. There is need for the procurement unit to be at strategic level in the CMST organogram. By being at the centre of strategic level the procurement will play its role in getting appropriate drugs through appropriate specifications
- 5.6.7. There is also need for proper quantification and forecasting of requirements. This will help a lot in obtaining medicines and medical supplies which are essential
- 5.6.8. Looking at the trend of medicines and medical supplies from stock status reports it is clear that the country faces a bigger problem in terms of availability of medicines. For example, a one month stock status report indicated 23% availability of medicines and medical supplies which means 67% were not available. Then how are people being treated?

5.7. Area for further Research

A further study could be carried out on the effects in health centres and hospitals caused by poor procurement processes.

5.8. Conclusion

The procurement process is an essential component of many organisations. Therefore, lack of procurement of medicines and medical supplies will affect the innocent patient. It has been noted that there is poor quantification and forecasting of medicines and medical supplies. There is need for CMST to have adequate funds for the procurement of essential medicines. The lack of funds to be used in the procurement of drugs continues to affect many facilities whose core business is supported by CMST. In order to avoid the expiry of medicines and medical supplies, there is need to have an effective inventory management system. Lack of on job training with special emphasis on storage, handling and lack of or improper quantification and forecasting at healthcare facility level appear to be some of the factors which cause stock out. Poor or lack of proper storage conditions in the health facility also hinder effective distribution system because in order for a vaccine to maintain its efficacy it required good storage condition from point of manufacture up to point of administration. Thus, an implementation of

effective procurement processes will ensure availability of medicines and medical supplies in health centres and hospital.

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APPENDIX A: INTERVIEW GUIDE

1. PERSONAL DATA

a) Age

20-29	
30-39	
40-49	
50-60	

b) Sex

Male	
Female	

c) Educational Level

Junior Certificate of Education	
Malawi School Certificate of Education	
Professional Certificate/Diploma	
Basic Degree	
Master's Degree	
Other(specify)	

d) Profession

District Hospital officer	
Pharmacists	
Procurement Officer	

Purchasing Officer	
Clinicians	

e) Work Experience

1-3 Years	
4-6 Years	
7-9 Years	
Over 10 Years	

2. What is the level of supply of medicines and medical supplies at CMST?

.....

3. How have the poor procurement process at CMST affected hospitals and health centres in the supply of MMS?

.....

4. Do you have any alternative way of getting MMS? If you have explain

.....

5. What are the possible advantages of having an efficient and effective quantification process in the procurement and inventory management of drugs?

.....
.....
.....
6. What is the minimum safety stock set for drugs? Do you reach this target?

.....
7. What do you think are the reasons for stock out of drugs and other medical supplies?
.....
.....
.....

8. Do you have guidelines for procurement and inventory management system? If yes, give the guidelines.
.....
.....
.....

9. What is the procurement period that is normally used in your organisation?
.....
.....
.....

10. How much time does it normally take for you to receive the MMS?
.....
.....
.....

11. What are some of the challenges you face when there is low supply of MMS?
.....
.....
.....

12. In your opinion, what should be done in order to improve the procurement process of medicine and medical supplies at CMST?

.....
.....
.....

Appendix B: Permission to Conduct the Study



MALAWI INSTITUTE OF MANAGEMENT

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Ref.No.MIM.H.3.166.1

21 April 2015

TO WHOM IT MAY CONCERN

Dear Sir/Madam:

AN INTRODUCTORY LETTER FOR MR. TONNY MARVIN MTAMA: 1308213

Mr. Tanny Marvin Mtama is a student on an MSc in Supply Chain Management Programme, which is run by MIM in collaboration with the University of Bolton in the United Kingdom. He is now at the dissertation stage and his topic is "**Assessing The Impact Of Procurement Processes On Availability Of Medicines And Medicals Supplies In Malawi: A Case Of Central Medical Stores Trust (CMST)**". Any assistance you can give him while he is collecting data and information through interviews and questionnaire will be greatly appreciated. You could also help by giving him any documents relevant to the study. I assure you that any information given to him will be treated in the strictest confidence.

We thank you in advance for your assistance.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'HMSosa', is written over a circular stamp or seal.

Hendrina Msosa
for: **EXECUTIVE DIRECTOR**

hgm/...

Appendix C

JANUARY 2012 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	74	64	10	54
CLASS B	93	59	34	59	50	9	63
CLASS C	7	3	4	4	4		57
CLASS D	45	26	19	15	11	4	33
CLASS E	115	81	34	66	54	12	57
CLASS F	40	26	14	23	14	9	58
CLASS G	92	56	36	45	34	11	49
CLASS H	578	302	276	169	135	34	29
CLASS K	12	8	4	7	5	2	58
CLASS L	93	15	78	36	27	9	39
CLASS M	525	191	334	213	168	45	41
CLASS N	149	56	93	51	38	13	34
CLASS P	245	157	88	84	61	23	34
CLASS R	22	17	5	13	7	6	59
TB PROGRAM	84	55	29	46	39	7	55
FP PROGRAM	7	7	0	5	5		71
STI PROGRAM	24	24	0	17	17		71
GF PROGRAM	147	147	0	91	91		62
DF PROGRAM	3	3	0	2	2		67
TOTAL	2,419	1,332	1,087	1,020	826	194	42

JUNE 2012 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	71	55	16	51
CLASS B	93	59	34	57	46	11	61
CLASS C	7	3	4	5	5		71
CLASS D	45	26	19	17	13	4	38
CLASS E	115	81	34	69	56	13	60
CLASS F	40	26	14	22	17	5	55
CLASS G	92	56	36	49	40	9	53
CLASS H	578	302	276	224	182	42	39
CLASS K	12	8	4	7	7		58
CLASS L	93	15	78	46	32	14	49
CLASS M	525	191	334	216	149	67	41
CLASS N	149	56	93	61	40	21	41
CLASS P	245	157	88	99	88	11	40
CLASS R	22	17	5	14	14		64
TB PROGRAM	84	55	29	45	30	15	54
FP PROGRAM	7	7	0	6	6		86
STI PROGRAM	24	24	0	15	15		63
GF PROGRAM	147	147	0	98	98		67
DF PROGRAM	3	3	0	2	2		67
TOTAL	2,419	1,332	1,087	1,123	895	228	46

DECEMBER 2012 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	48	42	6	35
CLASS B	93	59	34	42	31	11	45
CLASS C	7	3	4	2	2		29
CLASS D	45	26	19	7	4	3	16
CLASS E	115	81	34	31	23	8	27
CLASS F	40	26	14	19	12	7	48
CLASS G	92	56	36	36	32	4	39
CLASS H	578	302	276	99	76	23	17
CLASS K	12	8	4	3	3		25
CLASS L	93	15	78	17	10	7	18
CLASS M	525	191	334	103	72	31	20
CLASS N	149	56	93	44	32	12	30
CLASS P	245	157	88	29	24	5	12
CLASS R	22	17	5	7	7		32
TB PROGRAM	84	55	29	17	13	4	20
FP PROGRAM	7	7	0	2	2		29
STI PROGRAM	24	24	0	9	9		38
GF PROGRAM	147	147	0	44	44		30
DF PROGRAM	3	3	0	2	2		67
TOTAL	2,419	1,332	1,087	561	440	121	23

JANUARY 2013 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	46	41	5	33
CLASS B	93	59	34	38	32	6	41
CLASS C	7	3	4	3	3	0	43
CLASS D	45	26	19	9	6	3	20
CLASS E	115	81	34	51	40	11	44
CLASS F	40	26	14	11	6	5	28
CLASS G	92	56	36	31	25	6	34
CLASS H	578	302	276	62	46	16	11
CLASS K	12	8	4	3	3		25
CLASS L	93	15	78	16	7	9	17
CLASS M	525	191	334	71	55	16	14
CLASS N	149	56	93	31	24	7	21
CLASS P	245	157	88	21	18	3	9
CLASS R	22	17	5	12	9	3	55
TB PROGRAM	84	55	29	41	34	7	49
FP PROGRAM	7	7	0	4	4		57
STI PROGRAM	24	24	0	3	3		13
GF PROGRAM	147	147	0	15	15		10
DF PROGRAM	3	3	0	1	1		33
TOTAL	2,419	1,332	1,087	469	372	97	19

DECEMBER 2013 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	56	40	16	41
CLASS B	93	59	34	55	49	6	59
CLASS C	7	3	4	3	3		43
CLASS D	45	26	19	16	11	5	36
CLASS E	115	81	34	45	32	13	39
CLASS F	40	26	14	17	13	4	43
CLASS G	92	56	36	44	36	8	48
CLASS H	578	302	276	91	79	12	16
CLASS K	12	8	4	7	3	4	58
CLASS L	93	15	78	15	9	6	16
CLASS M	525	191	334	156	137	19	30
CLASS N	149	56	93	52	41	11	35
CLASS P	245	157	88	47	40	7	19
CLASS R	22	17	5	11	7	4	50
TB PROGRAM	84	55	29	52	38	14	62
FP PROGRAM	7	7	0	4	4		57
STI PROGRAM	24	24	0	3	3		13
GF PROGRAM	147	147	0	15	15		10
DF PROGRAM	3	3	0	1	1		33
TOTAL	2,419	1,332	1,087	690	561	129	29

JANUARY 2014 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	59	50	9	43
CLASS B	93	59	34	49	41	8	53
CLASS C	7	3	4	3	3	0	43
CLASS D	45	26	19	7	7	0	16
CLASS E	115	81	34	49	44	5	43
CLASS F	40	26	14	22	21	1	55
CLASS G	92	56	36	30	27	3	33
CLASS H	578	302	276	91	75	16	16
CLASS K	12	8	4	2	1	0	17
CLASS L	93	15	78	16	8	8	17
CLASS M	525	191	334	88	48	40	17
CLASS N	149	56	93	29	23	6	19
CLASS P	245	157	88	48	29	19	20
CLASS R	22	17	5	11	10	1	50
TB PROGRAM	84	55	29	38	34	4	45
FP PROGRAM	7	7	0	5	5	0	71
STI PROGRAM	24	24	0	3	1	0	13
GF PROGRAM	147	147	0	15	7	0	10
DF PROGRAM	3	3	0	2	0	0	67
TOTAL	2,419	1,332	1,087	567	434	120	23

DECEMBER 2014 STOCK STATUS REPORT

CLASS OF ITEMS	TOTAL NUMBER OF ITEMS	TOTAL FIRST PRIORITY ITEMS (A)	TOTAL SECOND PRIORITY ITEMS (B)	TOTAL NUMBER OF ITEMS AVAILABLE	FIRST PRIORITY ITEMS AVAILABLE (A)	SECOND PRIORITY ITEMS AVAILABLE (B)	PERCENTAGE NUMBER OF ITEMS AVAILABLE
CLASS A	138	99	39	96	80	16	70
CLASS B	93	59	34	71	62	9	76
CLASS C	7	3	4	5	3	2	71
CLASS D	45	26	19	26	21	5	58
CLASS E	115	81	34	71	60	11	62
CLASS F	40	26	14	32	26	6	80
CLASS G	92	56	36	62	51	11	67
CLASS H	578	302	276	316	268	48	55
CLASS K	12	8	4	7	6		58
CLASS L	93	15	78	48	42	6	52
CLASS M	525	191	334	302	281	21	58
CLASS N	149	56	93	88	79	9	59
CLASS P	245	157	88	158	146	12	64
CLASS R	22	17	5	12	8	4	55
TB PROGRAM	84	55	29	45	42	3	54
FP PROGRAM	7	7	0	5	5		71
STI PROGRAM	24	24	0	16	16		67
GF PROGRAM	147	147	0	124	78		84
DF PROGRAM	3	3	0	2	2		67
TOTAL	2,419	1,332	1,087	1,486	1,276	163	61