SUSTAINABILITY OF UNIVERSAL HEALTH COVERAGE: THE CASE OF MEDICAL SUPPLIES BY KENYA MEDICAL SUPPLIES AUTHORITY

CHRISTINE N. MWANGI

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BY

CHRISTINE N. MWANGI

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STUDENT DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University-Africa in Nairobi for academic credit.

Signed: ___________________________          Date: ________________

Christine N. Mwangi (ID 654984)

The project has been presented for examination with my approval as the appointed supervisor.

Signed: ___________________________          Date: ________________

Timothy C. Okech, PhD

Signed: ___________________________          Date: ________________

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ABSTRACT

The general objective of the study was to analyze factors that affect the sustainability of supply of quality and affordable essential medicines by KEMSA in the realization of Universal Health Coverage. KEMSA is an authority mandated by the KEMSA Act 2018 to enter into partnerships with all county governments to establish drawing rights for supply of medical commodities. The objectives of the study were: examine factors influencing the sustainability of the current funding model for purchase of essential medicines in the implementation of Universal Health Coverage, describe factors which determine the provision of affordable medicines by KEMSA in the implementation of Universal Health Coverage and the medical commodity management tools in place for monitoring and evaluating commodity management of drug supply by KEMSA.

The study was conducted using descriptive research design, from a universe of 341 staff in KEMSA and four chief county pharmacists in the four pilot UHC counties. The researcher used stratified random sampling to select a sample of 186 staff from KEMSA. The data was collected by use of questionnaires which were sent via e-mail to the respondents. Sixty-five percent of the issued questionnaires were duly filled, the data collected was analyzed using Statistical Packages for Social Sciences (SPSS). The researcher collected qualitative data and used descriptive statistics to determine the mean and percentages, while using inferential statistics to describe the relationship between the variables studied.

The study found that sustainable funding for purchase of essential medicines has a positive relationship with UHC implementation. The amount of funding received by KEMSA from the MoH was found to be sufficient and in addition to that, the donors were found to be in support of implementation of UHC. The respondents felt that the implementation of UHC will lead to an improved financial position of KEMSA and that the entity had adequate staff and warehouse capacity which is sustainable with the current funding model. The study also showed that KEMSA and county staff are aware of the UHC funding model and are therefore well capable to work efficiently and effectively within the resources availed.

The study showed that the affordability of drugs was essential in the implementation of UHC. The staff in KEMSA and in the county were found to be aware of KEMSA’s pricing policy. KEMSA provides the counties with a price list that is viewed on the LMIS and allows the county pharmacists to plan for medicine orders. The visibility of the price list ensures transparency between KEMSA and the counties. KEMSA engages with price
negotiations with the drug suppliers by way of having transparent tendering processes and in that way ensure that there is no room for price inflation.

The study found that the prices offered by KEMSA do not fluctuate often, and KEMSA therefore offers standard priced medicines and technological supplies to the counties. The standard prices were also found to protect the customer from the laws of demand and supply which would lead to price fluctuation. This is in line with the finding that KEMSA is able to offer price discounts to the counties as a result of the price negotiations with the drug manufacturers and suppliers. KEMSA was found to have a profit margin to the price of the commodities offered to the counties, this is used to allow for operational cost recovery for the warehousing and delivery of commodities.

From the study it was also established that KEMSA trains the county staff on commodity management. This is one of the tools used to monitor the drugs at the county level. The use of the sales representatives also allows KEMSA to collect data from the health facilities in the counties. The data was found to be useful for KEMSA’s planning and setting of economic reorder levels. The study therefore concludes that the factors analyzed are significant in the sustainability of UHC in Kenya, since they affect positively the supply of medicines by KEMSA.

The study recommends that the current funding model should be examined further from the view of the MoH and the donors who play a notable role in funding KEMSA’s current operations. KEMSA should endeavor to ensure that staff capacity is maintained at sustainable levels, as should the warehouse capacity. The two factors have a direct influence on the implementation of UHC as was found out in the study. This will provide a broader perspective on the sustainability of UHC. KEMSA should also ensure that the drugs supplied to the counties are affordable through continued price negotiations with drug manufacturers. The study also recommends for continued monitoring of drug supply to the counties so as to be able to measure drug accessibility at the counties.

The study concludes therefore, that there is a positive relationship between the sustainability of UHC and the current funding model for purchase of medical supplies in KEMSA. In addition to that, the affordability of medical supplies will positively affect the sustainability of UHC, as will the tools that KEMSA has in place for monitoring UHC implementation.
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DEDICATION
This research is dedicated to my husband, Alex, for the patience and love especially on the difficult days.
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<tr>
<td>CMAM</td>
<td>Central de Medicamentos e Artigos Medicos-Mozambique</td>
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<tr>
<td>CMS</td>
<td>Central Medical Stores</td>
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<tr>
<td>CMST</td>
<td>Central Medical Store Trust</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>DPF</td>
<td>Donor Pool Fund</td>
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<td>EMMS</td>
<td>Essential Medicines and Medical Supplies</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GFATM</td>
<td>The Global Fund to fight AIDS, Tuberculosis and Malaria</td>
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<tr>
<td>GOK</td>
<td>Government of Kenya</td>
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<tr>
<td>HIV/AIDS</td>
<td>Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>IRP</td>
<td>International Retail Price</td>
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<tr>
<td>KEMSA</td>
<td>Kenya Medical Supplies Authority</td>
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<td>LMIC</td>
<td>Low and Medium Income countries</td>
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<td>LMIS</td>
<td>Logistics Management Information System</td>
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<td>MEDS</td>
<td>Mission for Essential Drugs and Supplies</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>MSA</td>
<td>Medical Savings Account</td>
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<td>MTEF</td>
<td>Medium Term Expenditure Budget</td>
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<tr>
<td>ONAPHARM</td>
<td>Organisation Nationale d’Approvisionnement Pharmaceutique-Burkina Faso</td>
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<tr>
<td>PEPFAR</td>
<td>President’s Emergency Plan for AIDS Relief</td>
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<td>PPP</td>
<td>Purchasing Power Parity</td>
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<tr>
<td>Abbreviation</td>
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<tr>
<td>RBF</td>
<td>Result Based Financing</td>
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<td>Universal Health Coverage</td>
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Universal Health Coverage (UHC) means that all people have access to the health services that they need without the risk of financial hardship when paying for them (WHO, 2010). According to the World Health Organization-WHO (2010), this requires an efficient health system that is able to provide quality services, health workers, medicines and technology to the country’s citizens. There is also a need for an efficient financing system that will protect the citizens from experiencing financial hardships as they seek these health care services. The objectives of UHC are embodied in the definition; to ensure equitable access to healthcare for all, quality health care that is good enough to improve the health of those receiving it, ensuring those receiving the service are not put at risk of financial harm. UHC monitoring focuses on two aspects, the proportion of the population that has access to essential health care and the proportion of the population that uses a substantial amount of their household income for healthcare purposes (WHO, 2010).

The journey towards UHC began in 1977 when all member states of the WHO set goals to have affordable healthcare for all by the year 2000. The main strategy was to have primary health care accessible by all and to have each member state develop individual strategies on how equitable health care can be achieved. The ministries of Health (MoH) were charged with the responsibility of coming up with master plans on how this endeavor would be financed taking to consideration factors like government’s direct and indirect financing, insurance schemes, community contribution and individual payment for services (OMS-WHO,1981). The goals set out in 1977 are not fixed and have now become continued aspirations for the member states. Health care financing has become a burden for most governments and this has led to many national health care schemes being conceptualized to try ease the financial burden of health care on the government (Plianbangchang, 2018).

Globally, public spending on health from domestic sources has been on an upward trend since the year 2000. The increase in public expenditure has been higher in the developed countries than in the developing countries. This has not been clearly explained by the WHO, but it is believed that the developed countries’ increased prioritization of health care is as a result of the societal demands expressed by the politicians empowered by citizens. For the Low and middle Income Countries (LMIC) the growth of GDP determines the public spending on health care and not necessarily prioritization of the same (Xu et al., 2018).
Governments are responsible for ensuring that drug financing is managed in ways to ensure equity and efficiency in access to essential drugs. One of the ways to ensure this is by having public spending as a means of drug financing. This is only one of the ways of drug financing, the others being health insurance, donor funding, charging user fees and loan financing (Na Songkhla, Mongkol, Wibulpolprasert, Suwit & Prakongsai, 1998).

As part of the realization of UHC, supply of affordable drugs and other medical supplies is necessary. Ensuring accessibility and affordability requires legislative support so as to grow the generic market. National policy reforms to use generic drugs will require three other factors in addition to legislative reforms, that is; reliable quality assurance, private and public acceptance and economic incentives. Another recommended method is by ensuring controlled prices of medicines and medical supplies. This has been recommended so as to avoid high distribution prices being added on the manufacturing price and hence making the drugs unaffordable. The price controls encourage transparency and therefore ensure equity and affordability of medical supplies (Na Songkhla, Mongkol, Wibulpolprasert, Suwit & Prakongsai, 1998).

There are a number of options in which a country can use to finance the purchase of medicines for its citizens. These include; taxation, social insurance, private health insurance, community financing, drug sales, revolving funds and medical savings account. Financing of medicines and other medical supplies is heavily dependent on political commitment and financial sustainability. To add on to the affordability of medicines, having a reliable medicines supply chain system is also key (Kanavos, Das, Durairaj, Laing, & Abegendu, 2010).

Securing sufficient budgetary allocation for healthcare is necessary and equally important is financial management and planning. In some occasions, budgetary shortfalls result from inadequate revenue collection by the government and in other instances, there is budget under-absorption due to long procurement procedures. It is necessary for the Ministry of Health-MoH to make strong arguments for increase in budgetary allocations to healthcare since there are other competing priorities e.g. education. In developed countries, 70% of healthcare spending is publicly supported while in LMICs 80% of healthcare spending is out of pocket (Management Sciences for Health, 2011).

Other than increasing budgetary allocations from the national budget, the use of national insurance scheme is an alternative for drug financing. The institutionalization of a country
wide insurance will face challenges in implementation, such as, the small percentage of the population under formal employment and the weak management mechanism of the national scheme. These challenges should not hinder the use of the national schemes since the advantages greatly out-weigh the challenges (Na Songkhla et al., 2018). The charging of user fees has also been implemented in most countries as a way to supplement the government budgetary allocations and also insurance premiums. The user fees are charged at different levels of service delivery but should mostly use a top-down approach when being implemented. This will help ensure equitable access to drugs since higher fees are first charged at the National Referral Hospitals first then lower fees downstream at the Rural Health Facilities. Na Songkhla et al. (1998) advises that the user fees are to supplement the government spending and not to replace it as a way of funding.

Most countries in the world have in place a system for procuring medicines and medical supplies for the public health facilities. Some procure and distribute with total reliance on the public sector and some have tried to bring on board the private sector so as to enhance public health efficiency (Quick et al., 1999). In Kenya, KEMSA is the entity institutionalized by an Act of Parliament to procure, warehouse and distribute medicines country wide (The Kenya Medical Supplies Authority Act, 2013). For the supply of these medical commodities, KEMSA has to ensure that it operates at optimal efficiency and effectiveness. Quick et al. (1999) notes that there are many steps in the procurement process. 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.

The United Kingdom has made strides in ensuring equitable access to medicines by all its citizens. The National Health Service (NHS) of the United Kingdom is a single payer system which constituted in 1948. The system is operational in all the countries that constitute the United Kingdom though not similar in all. The NHS functions are divided into two, the policy and management arm and the medicine/pharmacy arm. This allows for effectiveness due to separation of duties and activities in the two arms (Grosios, Gahan, & Burbidge., 2010). The objectives of the policy making arm of the NHS are: to provide prompt access to effective treatment, ensure affordable spending on medicines and ensuring
long term medicine innovation. With the challenges of maintaining drugs at affordable prices within a tight budget, the NHS has campaigned for use of generic medicines.

The NHS plays a big role in regulating the prices of medicines both for originator and generic brands. There is constant negotiation with drug manufacturers to ensure that expenditure on drugs is within approved budget. The price regulation allows for competitive pricing and hence leads to cost saving for the entity. The introduction of the budget impact metric has also helped to increase availability of drugs in the UK. The list of drugs that are to be provided have to pass this budgetary indicator test which has a threshold of 20 Million Euros, any amount above this leads to negotiations with the manufacturer for a more affordable price (Ewbank, Omojomolo, Sullivan, & McKenna., 2018). These negotiations ensure drug affordability for the NHS and hence ensure drug availability for all UK’s citizens.

The shift of Malawi’s Central Medical Store (CMS) to a trust in 2011 led to increased availability of drugs in the public health facilities. This is so because of the increased autonomy in the entity as opposed to the earlier CMS which was highly reliant on government funding and was fully run by the Malawi government. (Khuluza, Kadammanja, Simango,& Mukhuna., 2016) The Central Medical Store Trust (CMST), operates on a revolving fund and is mandated to procure medical supplies for the public health facilities. The health facilities in Malawi, before 2011 had experienced drug shortages as a result of inadequate funding, long procurement processes, high cost of drugs and even pilferage. In addition to this, other challenges were poor use of Information Technology for procurement planning and weak supply chain management (Malawi Ministry of Health, 2017).

KEMSA has a key role to play in UHC implementation. This is because the supply chain of pharmaceutical product has to ensure quality drug purchase, distribution of the medical supplies to all areas, regulation of drug prices and ensure accessibility to a wide variety of drugs. These factors may be compromised if each facility or county has to procure for themselves. KEMSA is tasked to ensure that the price of the drug is not inflated as it moves downstream in the supply chain as this will affect negatively the affordability of drugs. KEMSA should also ensure that the drugs reach the last mile without any price discrimination and hence increase drug availability in Kenya (Conference Proceedings Report on Universal Health Care, 2018).
1.2 Statement of the Problem
Supply of affordable medicines to the last mile is one success factor for UHC implementation. The other success factors are quality, price and reliability of the medial supplies. Quality is ensured by eradicating the problem of counterfeit medicines, price controls ensure that the drugs are affordable to every Kenyan and the reliability is achieved by ensuring that all Kenyans have access to the drugs (Conference Proceedings Report on Universal Health Care, 2018).

The regulation of prices has been difficult in Kenya and also in the African context. In Malawi, the shortages due to long procurement processes and prevalent pilferage, there are drug shortages that cause the health facilities to procure from the private sector and hence make the drugs unaffordable to most citizens (Malawi Ministry of Health, 2017). This is an indication that the government is not able to regulate drug prices and it cannot also be able to control drug supplies to the health facilities.

There are challenges that have been prevalent in Kenya’s pharmaceutical market and could hinder the successful implementation if UHC. There is a challenge of data collection to aid in budgetary planning and allocation which leads to under budgeting in some areas and hence shortage of drugs. The poor infrastructure leads to difficulty at the county to order from KEMSA through the LMIS. Poor training of the staff at the health facilities also leads to poor planning resulting to shortages at the facilities (Conference Proceedings Report on Universal Health Care, 2018) avoid over-reliance on a single source.

Expire of drugs has been prevalent in Kenya and this was attributed to poor planning and poor projection of country needs. The resale of expired drugs that were repackaged by unscrupulous traders had been a challenge for KEMSA and this led to the entity being required to mop up all expiries from the counties (Conference Proceedings Report on Universal Health Care, 2018). In addition to this, pilferage of drugs may also inhibit UHC since the procured amounts were not able to reach the intended user or will be sold in the market at very high prices. As a result of this, for the low income individuals in both the rural areas and the urban poor, 50-90% of their out of pocket spending to access medicines was from the private pharmaceutical marketers (Na Songkhla et al., 1998). In a study conducted in Kenya by the WHO in 2005, it was found that the drug prices at the public health facilities was at 1.99 time the International Retail price. This meant that most of the lowest paid citizen had to spend on average four day’s wage to be able to afford essential drugs (Medicine Prices in Kenya, 2006).
Further to this, KEMSA had to ensure operational efficiency by collecting debts owed by the counties. The count debt level was at Ksh.2.4 Billion by April 2018. This hindered KEMSA’s operations at the time and presented cash flow challenges. (Conference Proceedings Report on Universal Health Care, 2018).

1.3 General Objective
The general objective of this study was to analyze factors affecting the sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage

1.4 Specific Objective
1.4.1 To examine factors influencing the sustainability of the current funding model for purchase of essential medicines in the implementation of Universal Health Coverage.
1.4.2 To analyze factors which determine the provision of affordable medicines by KEMSA in the implementation of Universal Health Coverage.
1.4.3 To describe the medical commodity management tools in place to ensure sustainable drug supply in Kenya.

1.5 Significance of the Study
The findings of this study may help Policy Makers, KEMSA management, key strategic partners in healthcare and researchers.

1.5.1 Policy Makers
This research may be useful to the policy makers in the Ministry of Health who prepare MTEF budgetary plans. They may be able to negotiate better for higher allocation from the National Treasury. The findings will also allow the Ministry of Health to be able to plan better for the successful implementation of UHC

1.5.2 KEMSA Management
The findings of this research may assist the KEMSA Management to create better strategies on how to deliver service to the counties and maybe rein fence funds meant for health care with the National treasury. The management will be able to plan better for the future of the organization in the industry within which it operates. The management may find out how the organization is performing in the eyes of the citizens in the counties that UHC has been rolled out and therefore be able to improve performance
1.5.3 Key Strategic Partners

The findings of this research may help the current donors to in the health sector understand the impact they have on the society and Kenya as a whole. They may be able to understand better the impact of their projects especially in funding HIV/AIDS, Tuberculosis and Family Planning projects in the country.

1.5.4 Researchers

This study will focus on sustainability of UHC funding model especially in provision of quality medical supplies. Future researchers may base their research on UHC implementation in Kenya on the findings of this research. Factors discussed in this paper may be useful in growing the area of UHC financing, drug affordability and UHC monitoring in Kenya.

1.6 Scope of the Study

This study analyzed the factors that influence sustainable funding for implementation of UHC in Kenya with a focus on provision of quality medicines to all Kenyans. The study analyzed the role of KEMSA in procuring, warehousing and distribution of medical supplies in four of the pilot counties (Isiolo, Kisumu, Nyeri and Machakos) in which UHC had been rolled out as at December 2018. The researcher collected data from 325 KEMSA employees based in Nairobi, and 16 sales and marketing representatives based in all the 47 counties. In addition to this, one county pharmacist in each of the two selected pilot counties was part of the sample.

The research process was limited by the time that was available for the study to be carried out and by the number of counties that were to be part of the study. Only two counties could be studied within the required period and therefore the two were a representation of all the 47 counties in Kenya. The findings of this study were limited to the KEMSA management staff at this point since majority of the respondents were from KEMSA.

1.7 Definition of Terms
1.7.1 Universal Health Care

Universal Health Coverage is defined as the access by all citizens to health services without the risk of financial hardship. It requires a sound health care system, well trained health workers, medicines, technology and a good financing system to protect the citizens from financial hardships (WHO, 2010).
1.7.2 Health Care Financing

Health Care financing is defined as the mobilization of resources to support provision of basic health services to the citizens of the country and to configure health service delivery systems. It also involves pooling of risks and creation of institutions so that the health system will perform its function in delivering quality services at no financial risk and as equitably as possible (Owusu-Sekyere & Bagah, 2014)

1.7.3 Sustainability

Sustainability is defined as the economic development to meet the needs of today without compromising on the ability of the future generation to meet their own needs (Pourtney, 2015)

1.7.4 Health facilities

Health facilities are defined as hospitals, and health care centers (Kirigia, Emrouznejad & Sambo, 2002). The technical efficiency in these facilities is key in UHC implementation.

1.7.4 Primary Healthcare

Primary healthcare is health care that addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services. It includes, maternal and child health care, family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases, appropriate treatment of common diseases and injuries and provision of essential drugs (Health Care Alma-Ata- USSR., 1978).

1.8 Chapter Summary

This chapter provides a background study on UHC and the role KEMSA has been mandated to play in supplying of essential medicines in its implementation and the study’s specific objectives are provided. The subsection includes the scope of the study, definition of terms and the chapter summary. The next chapter provides literature review followed by the research methodology in chapter three while chapter four provides results and findings. The last chapter provides summary, discussions, conclusions and recommendations.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction
This chapter will analyze literature from previous studies, company data and industry reports on sustainability of UHC and especially focusing on supply of essential medicines and medical supplies to health facilities. The research will investigate funding models that have been used in other countries for successful implementation of UHC that could be of use to Kenya. The role of KEMSA in ensuring affordability of medical supplies for UHC implementation and describe the commodity management tools put in place by KEMSA that will assist in monitoring and evaluation during implementation of UHC.

2.2 Sustainable Funding for Essential Medicines and Medical
The purchase of EMMS for supply to the health facilities in Kenya lies on the shoulders of KEMSA. The government agency is mandated to procure, warehouse and distribute medical supplies to the counties and the health facilities within the country (Kenya Medical Supplies Authority, 2013). The purchase of these commodities is funded by the Kenyan government through budget allocations from the National Treasury to MoH. The funding arrangements for the CMS have a great influence on quality and efficiency of service delivery. The case of Burkina Faso, Senegal and Cameroon analyzes the changes made in the CMS of those countries so as to try and enhance their effectiveness. For these countries, the CMS reforms saw the move from just having a line allocation in their budgets to performance based payments for services offered. This model allows for the CMS to operate with efficiency in mind as opposed to when their performance is not being measured by output levels (Govindaraj & Herbst, 2010).

The reforms that occurred in the three countries earlier mentioned led to great institutional reforms within the CMS especially in terms of redesigning of the funding model. After devolution, KEMSA’s funding model changed from relying only on monies from the national treasury to having a revolving fund model that led to autonomy of KEMSA operations (UNICEF, n.d.)

2.2.1 Funding Models for Purchase of EMMS
For UHC implementation to succeed, there are some factors that have to be considered. These are; people, services, policies and information. There is no single way of reforming health financing to move it closer to achieving UHC. The countries have to create policies
that go beyond the usual tax-funding models and National insurance policies. There is need to innovate and create new ways to achieve equitable health care. (Kutzin, 2012)

Several countries that have taken this journey of UHC have had to go through a metamorphosis of sorts as they try to get a right fit on how to finance health care. For Singapore, the shift of financing from government to the private sector has been a successful one notably one of the most innovative ways to go about it. This was achieved by restructuring of hospitals, such that the public sector health facilities have a certain level of autonomy. At the same time, the facilities are not privatized, since the health facilities are 100% owned by the Health Corporation of Singapore and only operational issues are decentralized (Meng-kin, 1998). This means that the hospitals are able to make their own demand and quantification so as to buy the medicines and supplies they need. The fees paid by the patients through the MSAs help to keep the hospitals running. This way efficiency is improved and likelihood of stock outs reduced.

In Burkina Faso, ONAPHARM was formed in 1985 with the mandate of procurement and supply the public sector health facilities. However, due to reduced budgetary allocation form the government and increased inefficiencies, the CMS had to be restructured. This restructuring meant also a change in the funding model. ONAPHARM started its transition in 1998 and has increased autonomy and 49% private ownership stake. This was done so as to increase funding and efficiency. The division of the corporation into two, one section to cater for social needs i.e. sale of EMMS to public sector health facilities and the other to sell to privately owned health facilities, has helped ensure sufficient funds for running the entity (Govindaraj & Herbst, 2010).

In Kenya, Academic Model Providing Access to Health-care (AMPATH) carried out a study between 2011 and 2012 to find out if Revolving Fund Pharmacy (RFP) would ensure sustainable access to essential medicines in Western Kenya, being the pilot region. The RFP model works in this way, USAID-AMPATH collaborate to have an initial donation of certain drugs to the county pharmacy. These drugs are to be resold at a marked up price to the patients who go the county pharmacy. The mark up is used so as to have the patients prefer to buy from the MoH provided drugs whose price is subsidized. The monies made from the sale of the USAID-AMPATH drugs are then used to create a revolving fund for the county pharmacy. The MoH remains the main supplier of drugs to the counties and therefore does not absolve the role of the ministry in providing drugs to the citizens. The
use of government–employed pharmacists allows for sustainability since the program does not require employment of new staff (Manji, Manyara, Jakait, Ogallo, & Hagedorn, 2016).

As noted by Manji, et al. (2016) the RFP program has increased drug accessibility since it avails a variety of drugs to the county pharmacies. The study shows that before the program was introduced in western Kenya, there were periods of drug shortage for as long as 46 days. In addition to ensuring that counties are equipped with essential medicines, the RFP has reduced out of pocket spending and has ensured that the patients are able to access quality medication. The study showed that before RFP implementation, patients would have to buy drugs not accessed in the county pharmacy from the private pharmacists whose prices were exorbitant and the drugs were of poor quality.

In Kenya, KEMSA is in charge of supplying public sector health facilities with EMMS through funding received from MoH. KEMSA funding is mainly from budgetary allocations from the National Treasury and any fees accrued as the entity conducts its supply chain business (Kenya Medical Supplies Authority Act, 2013)

2.2.2 Sustainable Funding for Purchase of EMMS

There is a need to understand whether UHC is a road map to success or just wishful thinking of something not attainable. Some reforms being carried out in the name of achieving equity may end up causing disparity in service provision (Kutzin, 2012). There isn’t a decided formula for achieving UHC therefore most countries are left to their own to figure out how to get there.

According to the Abuja Declaration, heads of state agreed to allocate at least 15% of their budgets to health care, this was done as the heads of states asked the donor countries to fulfill their promises in funding health care in the developing countries. In a progress survey ten years later, Kenya was ranked as one of the countries that had made insignificant progress (Abuja Declaration, 2015). However, this indicator of percentage budget allocation has not been very popular since it only looks at one side of the coin. The use of % of GDP spent on healthcare is a better indicator of the progress being made in UHC implementation. This is because government spending in healthcare is a better indicator than budget allocation. As government spending increases, there is convergence in UHC performance among countries. However, for the benefits of financial protection to be felt, the government must spend Purchasing Power Parity (PPP) of $40-$60 per capita. Any
amounts lower than this have shown that the country will experience disparity in healthcare (Jowett & Cylus, 2016).

One of the ways to ensure sustainability of UHC as shown in the study conducted above by Jowett & Cylus. (2016) is to increase government spending. However, the countries taken into consideration in arriving at this conclusion are those that rely heavily on donor funds and therefore in the conclusion, the writers have to issue the disclaimer that the PPP $40-$60 was inclusive of expenditure incurred from donor funds.

The use of RFP has led to sustainability of funds for procurement of essential medicines in most LMIC countries. The concept of RFP began in the 1980’s through the Bamako initiative as a way of ensuring sustainable funding for essential drugs. The pharmacies are started by having an initial donation of drugs to the pharmacy, which are then sold at a markup and the realized amounts are sufficient for the pharmacy to reorder. This was initiated by USAID so as to increase drug availability and ensure sustainable funding at the same time. The markup introduced on the commodities is small so as to maintain affordability too (Manji et al., 2016).

### 2.2.3 Result Based Financing for Sustainability

Result based financing can be described as a mechanism in which health facilities are at least partially funded as a result of their performance. This is different from line-budget approach where the facilities are funded so as to buy supplies or for administrative costs. This form of financing is highly recommended as a way of reforming the health care systems in developing countries. This form of financing helps to give the facilities more autonomy in decision making rather than the line–budget approach that has funds issued out for specific actions. This way, performance is improved since the output is measured by contractual agreements (Meessen & Sekabaraga, 2011).

There are advantages that accrue from this kind of financing which has been evidenced in countries like Rwanda, Burundi and Mozambique to mention but a few. Rwanda and Burundi have been able to make reforms in their health care system by allowing health facilities more autonomy (Meessen & Sekabaraga, 2011). While Mozambique presents a case of RBF in the country’s CMS (Spisak, Morgan, Eichler, Rosen, & Serumaga, 2016).

The Mozambique CMS (CMAM) has been operating using this model since January 2013. The performance of the entity is measured on five performance indicators based on Supply planning, distribution planning and warehouse planning. Performance is measured in
quarters and hence payment made in quarters, this encourages short term wins. Payment is only made on those targets which are achieved, performance is also measured individually hence encourages team work and the funds issued are used at the discretion if the entity. This has helped to increase accountability and efficiency of CMAM (Spisak et al., 2016)

The other notable advantage of RBF is the spillover effect that is a result of outcomes being directly linked to the funds issued. In Rwanda, the government is considering reforms to have the whole health sector adopting this mechanism. The National Treasury has found it easier to allocate funds to the health sector sections that are using this mechanism since it is easy to tie the input to outputs. This has also led to consideration of use of performance based budgeting (Meessen & Sekabaraga, 2011).

Result based financing will also assist in reduction of shortages being felt at the health center facilities. This is because the CMS will be rewarded based on results felt at the grass root and not by quantities procured. A case study of Zambia has shown that the disconnect between the procuring entity and the warehousing shows that the information flow is not efficient. This means that the procuring entity may procure just to keep the wheels turning with no connection to the results as the driver for effective procuring. The communication downstream has also been pointed out as very important in achieving the results that are very necessary for UHC implementation (Yadav, 2007). In Kenya and Tanzania, the stock outs have continued to bite hard on the citizens at the rural facilities since despite the donor funds and procurement being done by the government, there is a disconnect between the quantities being procured and the needs at the grass root level (Mackintosha et al., 2018). The frontline staffs in the facilities have to be trained on demand and quantification and the CMS needs to stop procuring on whims and develop a clear procuring plan.

2.3 Role of KEMSA in Ensuring Affordability of Medical Supplies in Kenya

2.3.1 Price Regulation and Negotiation

A key aspect in supply of medicines and equipment is the procurement process. The procuring entity has to carry out an evaluation to award a successful bidder a contract for supply of the medical supplies. This process takes into consideration the price of the product as one of the criteria to determine the bidder. Price of a locally manufactured product will often be cheaper than that of an imported product due to the avoidance of custom taxes and other freight charges (Kaur & Hall, 2002).
In the United States, there is little regulation of drug prices and the drug manufacturers can set as high a price as they deem fit. However, in the UK, the NHS uses a value-based approach rather than direct price control. The NHS limits the profit that pharmaceutical companies can make from drug sales. The use of the £20 Million budget impact criterion has led to price negotiations with the drug manufacturers so as to ensure drug affordability. This has however raised criticism from UK’s Pharmaceutical industry that the controls in the industry are killing innovation (Pharmaceutical Technology, 2018).

In India, the government has very strict control on drug prices and has encouraged development of the generic market. This has led to the country being one of the leading manufacturers of low cost medicine. The government in 2019 was however planning to make reforms to have the generic drugs restricted from trading using originator brand names and also to restrict price control to only the drugs found on the country’s essential medicines’ list (Pharmaceutical Technology, 2018). In South Africa, since 2004, the government has introduced annual price increase capping and encouraged the use of generic drugs. In addition to this, the country uses, Single Exit Price (SEP) which ensures that drugs are sold by the manufacturer to the retailers at a common price. This has led to reduced cases of prescription of expensive drugs by the pharmacies (Pharmaceutical Technology, 2018).

Sub-Saharan Africa has only 375 drug makers to serve 1.3 Billion people. India and China have a population of approximately 1.4 Billion people and has 10,500 drug manufacturers. The manufacturers in Africa purchase Active Pharmaceutical Ingredients from other global manufacturers which they formulate into pills and other medicines and then package and sell to the local market. These supplies are not globally acceptable since they do not meet all WHO requirements, and therefore cannot be sold internationally. The pharmaceutical market is Africa is still young and most of the medical supplies are imported. The importation of medicines leads to markups of even 20% being added to the cost of producing the drugs and therefore making the drugs expensive by the time they reach the African market. The African market is feasible for growing of the pharmaceutical market but this is highly dependent on the government incentives. The use of tax breaks, issuing of government tenders and the general attitude of the government will lead to establishing of a pharmaceutical market in Africa (Conway, Holt, Sabow, 2019).
The advantage of this development of the pharmaceutical industry will lead to economic development in Africa, drug innovation, and improved public health facility services. The awareness of country needs and production for the local market will lead to better health for all (Conway, Holt, Sabow, 2019). In Kenya the MoH in 2018 had requested the National Treasury to issue a gazette notice to allow for price regulation of essential medicines (Nasibo, 2018). There is no data on whether this had been effected as at the time of this study.

2.3.2 Sourcing for Essential Medicines

Research carried out in KEMSA has shown that there are stock-outs and delay in supply of medical supplies to the public health facilities over the years. Some of the main reasons highlighted in previous studies is the long procurement process which is governed by the Public Procurement and Disposal Act, and the fact that sometimes the facilities are informed of the stock outs at KEMSA warehouses too late (Okanda et al., 2013). This has led to cases where the facilities have to procure directly from other sources. WHO report on Health Employment and Economic Growth states that one of the ways to achieve economic growth is through promoting economic output. Among others, investing in healthcare infrastructure and ensuring efficient procurement and delivery of healthcare supplies is one of the key pathways to achieving UHC (Kieny et al., 2017).

According to a survey conducted by WHO between 2008 and 2015, in thirty countries ranked as LMIC, availability of originator brands was at 43% and generic brands at 63%. This was across all drug forms, essential medicines, and also considered both private and public health facilities. Affordability of these drugs was at 1.4 days’ wage in the low income countries while the requirement by the WHO is no more than 1 days’ wage. The most reliable way to measure drug affordability is to consider the number of day’s wage that is needed to purchase the drugs. This study showed that in the LMICs, drugs were unaffordable to most citizens had to sell off assets to be able to afford drugs that they needed (Ewen, Zweekhorst, Regeer, & Laing, 2017).

As a result, the only way to make medicines affordable is for government procurement to ensure that it is buying at the best prices. WHO has recommended control on the markups in the supply chain so as to make medicines affordable. This will only work if the procurement of medicines is done competitively as to arrive at the best price possible. WHO
has also recommended for use of generic medicines which are much more affordable than the originator brands (Ball, 2014)

In Zambia, Medical Stores Limited is a state company created in 1976 to procure, warehouse and distribute medical supplies. The company was 98% owned by the Ministry of Finance and 2% by the MoH, but this changed in 2012 (Medical Stores Ltd, 2017). The Ministry of Health was mandated to carry out all procurements but there were challenges since the MoH was not using framework contracts with the supplier of medical commodities and this made it difficult to know the procurement lead time on request of stock. The CMS had frequent stock outs since they had to wait to receive commodities from the procuring body (Yadav, 2007). This led to information conflict since the procuring body was not the one managing the operations at the stores and hence there was need for high levels of communication so as to achieve the required efficiency and co-ordination. This led to the creation of a new mandate in 2015, in line with the CMS’s Strategic plan 2015-17 which made the company autonomous in its decision making and procurement of drugs. This helped overcome the challenges of stock outs and also allowed for planning on drug procurement by the CMS (Yadav, 2007).

In Kenya, a study conducted by John Snow Inc. in 2001 showed that the price of drugs offered by KEMSA were to remain affordable as compared to prices offered by its competitor MEDS and any private sector supplier of drugs. The study shows that the KEMSA prices were 81 of the prices being offered at MEDS but this was before any cost recovery on delivery, cost of sale and other operational costs that KEMSA was to incur in procuring, warehousing and distributing the drugs (Aronovich & SteveKinnett, 2001). This shows the challenge that KEMSA is facing in ensuring that the drugs supplied to the counties remain affordable while still running an economically viable entity.

2.3.3 Reduced Out of Pocket Spending

The measure of drug affordability is based on the amount of income that an individual has to forgo so as to pay for medical attention (Wagstaff et al., 2018). The study conducted by Wagstaff et al. (2018) in 89 countries in the world tha have either began or already well in the implementation of UHC , found that half of the countries had catastrophic out of pocket spending on medical care. Catastrophic spending was defined in this study as income that is more than 40% of the household income net of amount spent on food. The catastrophic consumption level was increaing over the period of the study which was between 1997 and
The measure of drug affordability and drug prices has to take into consideration the aspect of how much household income is spent on accessing health care. The measure used in this study did not take into consideration the other costs e.g how far the individual had to travel to access the healthcare and medicine that they need.

For most countries, drug affordability for the citizens is being funded by use of National insurance schemes. According to a study by Lim. (2004) Singapore has an insurance scheme that was established in 1955 to provide protection for workers in their old age. The insurance scheme has grown to a magnitude where the individual contributions earn interest and can even be used as security for a mortgage. Medisave represents 6–8% of wages (depending on age) sequestered from the individual’s Central Provident Fund (CPF) account in anticipation of hospitalization and acute care medical expenditures in later life. It can be used for convalescent hospitals, hospices, and certain expensive outpatient treatments like day-surgery, radiotherapy, chemotherapy, renal dialysis, in vitro fertilization and even hepatitis B vaccination. Singaporeans presently contribute 36% of their gross salaries to the CPF, half of which comes from their employers. There is an element of risk pooling among family members, as it can be used to pay for the hospitalization bills of one’s spouse, children, siblings or parents. Any unspent balance in Medisave is passed on to the account holder’s beneficiaries upon his or her death. This allows for reduced out of pocket spending from the citizens of Singapore and the future generations.

In a bid to make drugs more affordable, Ghana has come up with a stratified mutual fund in addition to the national health insurer, this has provided the low income earners to access health care without bearing the same burden as the ‘working class’ of the society. According to the National Health Insurance Policy Framework for Ghana (National Health Insurance Policy Framework for Ghana, 2004), the vision of government in instituting a health insurance scheme in the country is to assure equitable and universal access for all residents of Ghana to an acceptable quality package of essential health care. The policy objective highlights that within the next five years, every resident of Ghana shall belong to a health insurance scheme that adequately covers him or her against the need to pay out-of-pocket at the point of service use in order to obtain access to a defined package of acceptable quality of health service. Ghana is committed to fashioning out its own unique health insurance strategy based on the Principles of Equity, risk equalization, cross-subsidization,
solidarity, quality care, efficiency in premium collection, community or subscriber ownership, partnership, reinsurance, and sustainability.

2.4 UHC Monitoring and Evaluation Tools

For success in any project, there has to be a system of looking back to see how far the project has come and to establish the path taken. This is because there has to be a strategy that is being implemented. The measurement of how far you have come is part of the monitoring and evaluation process. UHC has goals that have to be met so that success can be noted (World Bank; World Health Organization, 2017). Among the WHO Sustainable Development Goals on health, SDG 3b, requires that by 2030 countries will be able to support research on drugs and vaccines and ensure availability of drugs for all. The indicator for this goal is to have a substantial proportion of health facilities that have access to core/essential medicines (Rosen et al., 2017). This means that KEMSA has to have data on the health facilities that have and do not have access to the medicines they require so as to be able to plan ahead.

Equitable health care services were previously viewed as an end result of UHC as highlighted in the WHO reports but after 2015, it has now been viewed as a measurable aspect in implementation of UHC. It is no longer an end we want to achieve but a process that will lead to Universal health coverage. This means that a country has to develop ways to measure how they are attaining equitability all through the implementation process (Rodney & Hill, 2014). Studies have shown that inequity is likely to occur in quality of drugs and healthcare services at public health facilities in both developed and developing countries since in both the poor attended the rural facilities while the rich went to the general/provincial hospitals. This means that the poor have a restricted choice on the type of health care and drugs that they access (Rodney & Hill, 2014). KEMSA will therefore need to have tools that will allow for collecting data and measuring equitability and accessibility of the drugs supplied to the counties.

2.4.1 Tools Available for Measuring Effectiveness of Supply of EMMS

The data collected within the country should be able to give an idea of the population being served, the consumption habits of the population and the cost of providing these services. The cost will provide an insight on the financing necessary for achievement of universal coverage (Rodney & Hill, 2014).
WHO has stipulated aspects that need to be measured as a country monitors UHC. These aspects are equity and protection from financial loss. In Kenya, health workers have been trained on how to report on the MDG indicators and are able to do so at the facility level. The frequency of reporting depends on the data source and the sources of funding for the medical supplies. Routine reports are generated monthly. The monthly data generated does not represent the population since it is collected only from those who attend the facilities (Wagstaff et al., 2018).

Some data is not available from these routine reports such as information on Cervical Cancer screening and that from private sector has not been factored in. The Kenya Household and Health expenditure survey will be able to provide better information on this matter; however, it is conducted every five years. This therefore makes it difficult to provide routine reports on the protection from financial loss. The MoH does not provide estimates for proposed indicators and will therefore need to institutionalize these indicators so as to provide more data on this (Wagstaff et al., 2018). The MoH needs to create a better Health Information System (HIS) that will aid the collection and sharing of data. Currently, the HIS is lacking sufficient budgetary allocation, Human Resource and Infrastructure to generate this data on drug consumption. UHC monitoring will require consistent and accurate information so as to enable tracking of progress. Data collected has to be complete and timely so as to serve the intended purpose (Wagstaff et al., 2018).

Donor funding has been previously used to assist in data collection but that has led to inconsistency in reporting since every donor has particular aspects that they are interested in. The access to medical care remains largely inequitable and unaffordable to most of the Kenyan population. The fact that the UHC implementation has been left to rest squarely on the shoulders of the MoH in Kenya may lead to slow progress of the same. The MoH has no control over budgetary allocations neither can it influence the political standing. One of the tracer indicators in the WHO 2017 progress report on UHC has to do with accessibility of essential medicines that are listed in the WHO recommended list. However, the indicator is not measured to insufficient data. A study conducted by WHO between 2008-2015 in 30 LMICs showed that data on availability of essential drugs in Uganda and Tanzania was difficult to find, and therefore not possible to report on that aspect (Ewen et al., 2017). This shows clearly that data collection on the aspect of availability of medicines is poor (World Bank; World Health Organization, 2017).
There is a need for Kenya to develop a Monitoring and Evaluation framework so as to assist in policy creation and to create a clear road map on the progress of UHC implementation. KEMSA has to develop tools that take to account the tracer indicators so as to be able to collect data from all the facilities in Kenya. The MoH has a bigger role to play in developing the infrastructure necessary to collect this information in a timely manner.

### 2.4.2 Data on Drug Dispensing in Facilities

Data that could be useful to KEMSA is the amount if drugs that are being dispensed from the health facilities. This will enable KEMSA to come up with a plan on which drugs to procure, how much stock on the drugs to procure and schedule for delivery on the same since KEMSA will have understood the lead time. A study conducted in Egypt that used three indicators so as to establish drug use indicators in primary health care facilities indicates the useful information that data can provide. The study was conducted in the town of Alexandria and it was measuring three aspects; prescribing indicators-to measure appropriateness of the prescription given, facility indicator-to measure the availability of drugs in store and Patient indicator-to measure the quality of service being offered at the facility. The study showed that in some facilities the essential drugs available were 37% and this had far reaching consequences on the population in that area. The shortage of drugs adversely affected the welfare of the population (Akl, El Mahalli, Elkahky, & Salem, 2014).

In Kenya, data available on drug dispensing was from a study conducted in 2010. The data showed that on average three medicines are prescribed to patients visiting public health facilities. 93% of the drugs prescribed were on the national list of essential medicines and 86% of the prescribed drugs were issued to the patients in the facility in which they were seen. This shows that Kenya has not achieved 100% fill rate on the drugs needed by the patient, and some patients have to find alternative pharmacies to purchase the drugs they need and are not found in the county run (Kenya Pharmaceutical Country Profile, 2001).

### 2.4.3 Data on Drug Shortage

As previously noted in the Zambia case study, there is a disconnect between the procuring entity, the storing and warehousing entity and the distribution entity. This leads to a difficulty in determining reorder levels of the health facilities, the consumption patterns and the customer preference in the various health facilities. The mixture of the sources of funding also leads to facilities being issued with drugs they don’t need and not receiving those that they do (Yadav, 2007).
The Kenyan scenario has not been different with frequent shortages being reported at the health facilities due to delayed delivery and sometimes stock out at the CMS. The supply chain process in Sub-Saharan Africa has been difficult to follow due to overlapping procurements being done by the governments and the donors. In both Kenya and Tanzania, cases of patients having to bring their own supplies e.g. gloves are common. Once a patient receives a prescription, they are often sent to the private chemists to buy the prescribed drugs. Sadly, there isn’t enough data from either of the countries that can allow us to know how many patients have to bring their own supplies (Mackintosha et al., 2018).

The lack of this kind of data will provide a big challenge to implementation of UHC. There will continued shortages being felt on the ground and little knowledge if this at KEMSA’s demand and quantification management level. In Zambia, the MSL has only 50% availability of EMMS at any given time. This means that the health facilities may be enduring difficult times of stock outs or are buying from private wholesalers. This data only reflects on the supply side since there is availability of information from the CMS but little can be said on the health facility side –supply side- with certainty (Yadav, 2007).

The data collected in Kenya showed that the health facilities preferred to order from MEDS since they had a faster order turnaround time and were responsive to complaints. The health facilities also pined out that MEDS offered higher quality of drugs and their prices were competitive. Both countries have substantial reliance on international manufacturers for supply of medicines, especially in Tanzania more than in Kenya. This means that the procurement lead times will be longer for those supplies that re coming from the high seas.

The local manufacturers only account for a third of the production of the EMMS and therefore there is need for improvement on this. To be noted also is the fact that the donor programs require the drugs and supplies to be WHO accredited and this may pose a challenge for local producers (Mackintosha et al., 2018).

The study in Kenya and Tanzania concluded that there is need for better downstream relations. MEDS emerged better in most of the aspects that were being tested and this is mostly because of their relational aspect. They relationship that MEDS has maintained with the local manufacturers is far better than KEMSA’s and the staff at the health facilities feel that MEDS is doing a better job with responding to their concerns (Mackintosha et al., 2018).
The need for KEMSA to come up with tools to measure stock outs and other relational concerns at the facility level is one that needs to be looked into with urgency if UHC is to succeed in Kenya.

2.5 Chapter Summary
In this chapter, literature reviewed has been provided based on the research objectives. The next chapter provides the research methodology followed and the results and findings. Chapter five provides the summary discussions, conclusions and recommendations of the findings.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction
This chapter describes the method that the researcher used to collect and analyze data. It provides information on the research design, the population and sample size, the data collection, research procedure and how the data analysis done. The chapter also provides justification on the chosen methods of data collection and how the researcher went about it including the timelines of the activity. The data was be collected from KEMSA staff and two county pharmacists selected from the four pilot counties of UHC.

3.2 Research Design
Research design is the process that a researcher follows to answer their research questions (Akhtar, 2000). In this study, a descriptive research design was used by the researcher. The researcher used a case study approach to describe the factors that related to and influenced the specific research objectives of this study. The researcher used the case example of Kenya Medical Supplies Authority (KEMSA) for the study. Descriptive research design made use of qualitative and quantitative data. This involved the collection of data through questionnaires and then conducting empirical analysis on the collected data (Akhtar, 2000). One of the advantage of using a case study, is the flexibility the researcher has in terms of data collection, the use of questionnaire, direct interviews and written reports e.g. budget reports and financial statements. This flexibility allows increased depth of data collection (Ghauri, 2002).

The study was based on KEMSA since there was an abundance of reports on the role of the organization in Kenya’s Health Care Service and therefore the findings were useful in explaining emerging issues in the implementation of UHC. Especially so the equitable provision of affordable and quality medicines and the continued use of technology in provision of medicines and equipment to the counties. As highlighted by Ghauri, (2002) a case study approach is used to answer ‘why?’ and ‘how?’ questions and especially when the researcher has no control over the events.
3.3 Population and Sampling

3.3.1 Population

The study targeted 341 KEMSA staff of which 16 were KEMSA sales representatives. The target population was the county pharmacists in the four UHC pilot counties. The population was distributed as shown in Table 3.1.

Table 3.1: Population Distribution

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEMSA Staff</td>
<td>325</td>
<td>100%</td>
</tr>
<tr>
<td>KEMSA Sales Representatives</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>County Pharmacist-Kisumu, Nyeri, Machakos and</td>
<td>4</td>
<td>100%</td>
</tr>
<tr>
<td>Isiolo Counties</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: KEMSA Payroll List (2019)
County Chief of Staff (2019)

3.3.2 Sampling Design

The sampling design provides details on the sampling frame, the sampling techniques used and the actual sample size. The sample frame was sourced from the list of all KEMSA staff and the list of the chief county pharmacists in the selected counties, random stratified sampling was used to select the sample population.

3.3.2.1 Sampling Frame

Sampling Frame is a list of elements from your population from which your sample is drawn (Landreneau, 2009). The sampling frame consisted a list of all the KEMSA Staff – including sales representatives based in the various counties and chief county pharmacists in the pilot counties. This was provided by the KEMSA Human Resource office and the County Chief of Staff in the respective counties.

3.3.2.2 Sampling Technique

Sampling is defined as selecting a portion of the population that will be a representation of the whole population (Landreneau, 2009). The researcher used stratified random sampling technique to select the elements to be interviewed. This means that every element in the
population had an equal probability of being picked. The researcher used stratified random sampling since the population elements were grouped in terms of job grades/cadres. This grouping allowed the researcher to get information from the staff who were well versed with issues relating to UHC implementation. The information collected was therefore easy to compare and draw similarities and differences (Critically & Everyday, 2013). The researcher interviewed managers from KEMSA, other staff members from KEMSA, Sales representatives from KEMSA and county pharmacists in the two selected counties.

3.3.2.3 Sample Size

The sample size was selected from two strata, one being made up of KEMSA and the other being made up of the health officials in the respective counties. The research targeted a population of 341 staff of KEMSA and the four county pharmacists in the four pilot counties. The sample size for KEMSA was decided using the following formula;

\[ n = \frac{N}{1 + Ne^2} \]

Where \( n \) is the sample size to be used, \( N \) is the population size and \( e \) alpha of 0.05, confidence level of 95%.

For KEMSA,

\[ n = \frac{341}{1 + 341 \times 0.05 \times 0.05} \]

Therefore, \( n = 186 \)

The roll out having begun with serving only four counties, pharmacists from two of these counties were selected, they were from Machakos county and Nyeri county. The sample counties were selected based on the fact that UHC had rolled out in the particular counties. The sample selected is summarized in Table 3.2.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEMSA Staff</td>
<td>335</td>
<td>53%</td>
<td>178</td>
</tr>
<tr>
<td>KEMSA Sales Representatives</td>
<td>16</td>
<td>53%</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 3.2: Sample Size Distribution
3.4 Data Collection Methods
The researcher used questionnaires for data collection in KEMSA and the county pharmacists selected. The researcher developed her own questionnaire to suit collection of the facts that led to achieving the stated research objectives. The researcher’s questionnaire was custom made for this case study so that the questions could be framed in a manner to suit KEMSA and the county pharmacists. The questionnaires were also accompanied with a letter that introduced the researcher to the respondents and provided a brief on the reason why the researcher was conducting the study. This allowed the respondents to be comfortable and kept their answers relevant. The questionnaire included both open ended and closed ended questions which assisted the researcher to conduct analysis after the data collection exercise was done.

3.5 Research Procedure
The researcher used questionnaires to collect data for the project. The questionnaires were designed on the basis of the specific objectives discussed in the previous chapter of this paper. The questionnaire had four sections, one section for every specific objective and the first section for collecting bio- data of the respondent. The researcher sought for permission from the research department of USIU-A so that there was clarification that no harm will be caused to the respondents or the environment in the cause of data collection. The questionnaire was tested for validity and reliability through a pilot testing at least 5 staffs from KEMSA who were then be marked and excluded from the actual data collection phase. The content and design of questions was checked and verified by the research professional- the supervisor of the project. The questionnaire was then issued to a few respondents first so as to test the reliability and it will be issued to the same respondents for a second time so as to test for validity and consistency.

The researcher scheduled issue of the questionnaires to the two county pharmacists, the two were issued with the questionnaires at the same time and a period of 4 weeks was given for collection of all issued questionnaires. The sales representatives KEMSA also assisted with collection of data despite the challenge that distance would pose. The questionnaire best served its purpose as it was issued in the month of August 2019 since the fiscal year had just ended and therefore the counties had sufficient information on UHC implementation. The researcher made a full disclosure on the reasons for the research and the objective that the paper was highlighting. This allowed for the respondents to feel comfortable and at ease when answering the questions. The respondents were also assured anonymity so that the
respondents provided the correct answers without fear of discrimination or any form of repercussion. This also ensured that the researcher conducts data collection in an ethical manner.

**3.6 Data Analysis Methods**
The data collected was be analyzed by the researcher using SPSS. SPSS was used to key in the information collected and create a work book database for the researcher to conduct analysis. Excel was also used in addition so as to generate graphs and charts that will be required for data presentation. The data collected was analyzed all together with little regard being given to the strata that the respondent belonged to so as to make impartial conclusions. The findings were presented by use of graphs, tables and pie charts. The use of inferential statistics allowed the researcher to shoe the relationship between the variables and sustainability of UHC in Kenya.

The researcher fed the findings into excel and SPSS as the research progressed so as to avoid having a bulk of data at the end of the collection period that could have led to errors in data entry. The pilot stage of the questionnaire allowed the researcher to find the best analysis to conduct depending on the types of answers that were received. The researcher calculated means and percentages on all the data, use of variances when explaining the discrepancies of the findings on the ground and what may have been found out during research and the ANOVA analysis so as to understand the differences in averages collected in the various strata. Data analysis did not bear any bias and the researcher did not alter the data to present the findings that they may have expected, but the true state of issues was presented in this study. This will help future researchers as UHC implementation continues in Kenya.

**3.7 Chapter Summary**
This chapter detailed the study’s research Design, the sample size and the population of interest. The researcher employed a descriptive research design that endeavored to provide a causal relationship on the healthcare aspects being investigated on UHC financing sustainability. The sampling frame had been described by the researcher to provide a basis for sample selection. In addition to this, the researcher explained the data collection tools and the method of analysis that were used and provided a schedule of the research activity and mode of delivery of the research instrument. The next chapter provides results in relation the specific objectives. This is followed by the summary, discussions, conclusions and recommendations.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction
This chapter discusses the results of the data collected from the field, its presentation, analysis and interpretation. The study aimed at determining the factors affecting the sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage. The chapter starts with the general information for the respondents, descriptive analysis and regression analysis. The chapter concludes with the chapter summary.

4.2 Response Rate and General Information
The study sought to investigate the general information which include; the response rate, gender of respondents, age group, education level, job level, and the duration they have been in the organization.

4.2.1 Response Rate
The study’s target population entailed the selected sample of employees from KEMSA. A total of 186 questionnaires were issued out of which 121 were duly filled and returned. This translates to a response rate of 65% as shown in the Figure 4.1. The response rate is considered to be appropriate as it in line with Mugenda (2008) assertion that a response rate of 60% and above is very good and enables generalization of findings.

![Response Rate Pie Chart]

Figure 4.1: Response Rate
4.2.2 Gender of Respondents

The study sought to distinguish gender of employees and determine the degree of gender disparity as presented in Figure 4.3. The results showed that most 54% were male while 46% were female. This implied that persons of both gender are working in the organization and there is the implication that there are more males than females in KEMSA.

![Gender of Respondents](image)

**Figure 4.2: Gender of Respondents**

4.2.3 Age Group

This was done to establish the respondents’ age as measure of their maturity and ability to respond to the study questions. The results obtained are shown in the Figure 4.3. The findings obtained showed that the majority were between 26 to 35 years with a percentage of 44%, followed by those who were aged between 36 to 45 years with 31% representations, 13% of the employees were aged between 46 to 55 years, between 18 to 25 years was represented by 9% while lastly above 56 years was 3% as indicated. This implies that most of the respondents were above 18 years hence provided accurate and reliable information.
4.2.4 Education Level
This section aimed at determining the respondents’ academic qualifications based on their education level. The results are shown in the Figure 4.4. The findings obtained showed that majority at 48% had degree certificate, 37% had masters, 11% had diploma, 3% had certificate qualifications while 1% had PhD. This shows that the respondents were well qualified for their respective positions hence capable to respond fully to the research questions and understanding of the study topic.

4.2.5 Job Level
The study sought to distinguish job level for employees at KEMSA. The findings indicated that majority of the employees holds SA6-SA7 level with representations of 31%, followed
by level SA8-SA7 represented by 28%, 22% were job level of SA4-SA5, 13% represented managers at KEMSA, the sales representatives were indicated by 3% while chief county pharmacist was represented by 2%. The findings are indicated in the Figure 4.5 below.

![Figure 4.5: Job Level](image)

**4.2.7 Work Experience**

This section aimed at determining the duration the respondents had worked at KEMSA. This was essential as it gauges their knowledge ability on the organizations’ practices and experience. The results are presented in the Figure 4.6. The findings obtained showed that 19% had worked for a period of less than 1 year, 31% for a period of 1 to 3 years, 25% for a period of 4 to 6 years, between 7 to 9 years was 15% while above 10 years was represented by 9%. This thus implies that the respondents had worked in KEMSA for considerable lengths of times, hence well informed on the sustainability of the supply of quality and affordable medical supplies by KEMSA.

![Figure 4.6: Work Experience](image)
4.3 Sustainable Funding for Purchase of Essential Medicines

The study sought to understand sustainable funding for purchase of essential medicines. The findings of the study are indicated as follows; on average most of the employees agreed that there is sustainability for funding for essential medicines represented by a mean of 3.761. Most of the employees agreed that KEMSA funding from MOH is sufficient for UHC implementation where only 33% agreed and 27% strongly agreed and a mean of 3.562 and donor funding is necessary for the organization to fulfil its mandate in UHC in which 36% agreed, 41% strongly agreed while a mean of 3.967 was reported. The findings showed that KEMSA’s role in UHC implementation is clear to all where 46% agreed, 22% strongly agreed, and a mean of 3.653 and the organization has the staff capacity needed to implement UHC in which 45% agreed, 29% strongly agreed and a mean of 3.782 was reported.

The results of the study showed that KEMSA has warehouse capacity to service UHC facility orders where 40% agreed, 25% strongly agreed and a mean of 3.686 and further the organization staff are well aware of the guiding principles in UHC where 36% agreed 17% strongly agreed and a mean of 3.446 was reported. KEMSA has capacity to fully service county needs where the majority of the employees 52% agreed, 21% strongly agreed and a mean of 3.769 was reported and KEMSA’s financial position will improve with UHC Implementation where 41% agreed, 31% strongly agreed and a mean of 3.893 was reported.

The results of the study indicated that KEMSA has performance indicators for UHC where 42% agreed, 31% strongly agreed, and a mean of 3.941 and further the organization is aware of the UHC funding model where 49% agreed, 30% strongly agreed and a mean of 3.942. KEMSA’s strategic partners are in support of UHC where 41% agreed 29%, strongly agreed and a mean of 3.826 and their strategic partners are supplementing government financing for UHC in which 41% agreed, 26% strongly agreed, and a mean of 3.661 was reported. The summary of the findings on the sustainable funding for purchase of essential medicines. is indicated in the Table 4.1:
### Table 4.1: Sustainable Funding for Essential Medicines and Medical Supplies

<table>
<thead>
<tr>
<th>Description</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEMSA funding from MOH is sufficient for UHC implementation</td>
<td>7%</td>
<td>18%</td>
<td>15%</td>
<td>33%</td>
<td>27%</td>
<td>3.562</td>
</tr>
<tr>
<td>Donor funding is necessary for KEMSA to fulfil its mandate in UHC</td>
<td>4%</td>
<td>12%</td>
<td>8%</td>
<td>36%</td>
<td>41%</td>
<td>3.967</td>
</tr>
<tr>
<td>KEMSA role in UHC implementation is clear to all</td>
<td>4%</td>
<td>17%</td>
<td>12%</td>
<td>46%</td>
<td>22%</td>
<td>3.653</td>
</tr>
<tr>
<td>KEMSA has the staff capacity needed to implement UHC</td>
<td>3%</td>
<td>16%</td>
<td>7%</td>
<td>45%</td>
<td>29%</td>
<td>3.782</td>
</tr>
<tr>
<td>KEMSA has plant/warehouse capacity to service UHC count/facility orders</td>
<td>3%</td>
<td>14%</td>
<td>18%</td>
<td>40%</td>
<td>25%</td>
<td>3.686</td>
</tr>
<tr>
<td>KEMSA staff are well aware of the guiding principles in UHC</td>
<td>4%</td>
<td>17%</td>
<td>26%</td>
<td>36%</td>
<td>17%</td>
<td>3.446</td>
</tr>
<tr>
<td>KEMSA has capacity to fully service county needs</td>
<td>5%</td>
<td>6%</td>
<td>17%</td>
<td>52%</td>
<td>21%</td>
<td>3.769</td>
</tr>
<tr>
<td>KEMSA’s Financial Position will improve with UHC Implementation</td>
<td>4%</td>
<td>6%</td>
<td>18%</td>
<td>41%</td>
<td>31%</td>
<td>3.893</td>
</tr>
<tr>
<td>KEMSA has performance Indicators for UHC</td>
<td>3%</td>
<td>6%</td>
<td>18%</td>
<td>42%</td>
<td>31%</td>
<td>3.941</td>
</tr>
<tr>
<td>KEMSA is aware of the UHC Funding Model</td>
<td>5%</td>
<td>4%</td>
<td>12%</td>
<td>49%</td>
<td>30%</td>
<td>3.942</td>
</tr>
<tr>
<td>KEMSA’s Strategic Partners are in support of UHC</td>
<td>3%</td>
<td>11%</td>
<td>17%</td>
<td>41%</td>
<td>29%</td>
<td>3.826</td>
</tr>
<tr>
<td>KEMSA’s Strategic Partners are supplementing Government Financing for UHC</td>
<td>7%</td>
<td>14%</td>
<td>12%</td>
<td>41%</td>
<td>26%</td>
<td>3.661</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>4%</strong></td>
<td><strong>12%</strong></td>
<td><strong>15%</strong></td>
<td><strong>42%</strong></td>
<td><strong>27%</strong></td>
<td><strong>3.761</strong></td>
</tr>
</tbody>
</table>

#### 4.3.1 Correlations between Sustainable funding and UHC

The researcher conducted correlation analysis to determine sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage. The findings in Table 4.2 below indicate that sustainable funding \((r=0.756, p<0.05)\) positive and significant relationship with universal health coverage.
**Table 4.2: Correlations between Sustainable funding and UHC**

<table>
<thead>
<tr>
<th></th>
<th>Sustainable funding</th>
<th>Universal Health Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable funding</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>121</td>
</tr>
<tr>
<td>Universal Health Coverage</td>
<td>Pearson Correlation</td>
<td>.756**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>121</td>
</tr>
</tbody>
</table>

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

**4.3.2 Regression Analysis between Sustainable funding and UHC**

The researcher conducted a linear regression analysis so as to test relationship among variable on sustainability of the supply of quality and affordable medical supplies by KEMSA. The model summary findings are as shown in Table 4.3 below. The findings indicate that sustainable funding explain only 56.7% of the universal health coverage as represented by the R-squared. This therefore means that other aspects not studied in this study contribute only 42.9% of universal health coverage at KEMSA.

**Table 4.3: Model Summary between Sustainable funding and UHC**

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
</tr>
<tr>
<td>---------------</td>
<td>---</td>
</tr>
<tr>
<td>1</td>
<td>.756^a</td>
</tr>
</tbody>
</table>

^a. Predictors: (Constant), Sustainable funding

The results in Table 4.4 shows that significance value achieved was 0.000 which is less than 0.05 thus the model is statistically significant in predicting how sustainable funding influence universal health coverage. The F critical at 5% level of significance was 2.344. Since F calculated is greater than the F critical value was 158.299 this shows that the overall model was significant.
Table 4.4: ANOVA between Sustainable funding and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>31.380</td>
<td>1</td>
<td>31.380</td>
<td>158.299</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>23.590</td>
<td>119</td>
<td>.198</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54.970</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage
b. Predictors: (Constant), Sustainable funding

The Table 4.5 shows that taking sustainable funding to be constant at zero, universal health coverage will be at 1.165. Therefore, it can be deduced that a unit increase in sustainable funding would cause an increase in universal health coverage by a factor of 0.756. The significance value was less than 0.05 indicating a statistically significant. As per the regression results in Table 4.5 below the equation is as follows; Universal Health Coverage = 1.165 + 0.935 Sustainable funding.

Table 4.5: Coefficients between Sustainable funding and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.165</td>
<td>.277</td>
</tr>
<tr>
<td>Sustainable funding</td>
<td>.935</td>
<td>.074</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage

4.4 Provision of Affordable Medicines and Universal Health Coverage

The study sought to understand the role of KEMSA in ensuring affordable medicines. The findings of the study showed that most of the employees were in agreement and this was supported by 32% agreeing, 24% strongly agreed and a mean of 3.395. Respondents indicated that KEMSA offers the cheapest drugs in comparison with its competition this was supported by 31% of employees agreeing, 41% strongly agreed and a mean of 3.959 and further the prices of medical supplies offered by KEMSA fluctuate often where most 19% strongly disagreed, 36% disagreed and a mean of 2.521 was reported. The organization offer price discounts in which 31% agreed, 16% strongly agreed and a mean of 3.157 and that KEMSA have a pricing policy where 50% agreed, 32% strongly agreed and a mean of 4.074 was reported. Format this sub-section
The findings of the study showed that employees are aware of KEMSA’s Pricing Policy in which most of the respondents agreed by 44%, 24% strongly agreed and a mean of 3.661 was realized and that the organization’s prices are affected by laws of demands and supply where 30% strongly disagreed, 18% disagreed, and a mean of 2.744 was reported. KEMSA prices change depending on facility location where 29% strongly disagreed, 21% disagreed and a mean of 2.901 and that the organization has a price list which is given to all county pharmacists where most agreed with 37%, 43% strongly agreed and a mean of 4.091 was realized. KEMSA prices are negotiated with the supplier in which 41% agreed 23% strongly agreed and a mean of 3.628.

KEMSA has a profit margin added to the cost of medical supplies where 36% agreed 11% strongly agreed, and a mean of 3.099 was reported. Counties are involved in price setting at KEMSA in which 25% agreed, 25% strongly agreed and a mean of 3.000, further the organization offer value for money services in which 35% agreed, 37% strongly agreed and a mean of 3.909. The findings of the study on the provision of affordable medicines and universal health coverage is indicated in the Table 4.6.

Table 4.6: Provision of affordable medicines and Universal Health Coverage

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does KEMSA offer the cheapest the drugs in comparison with its competition?</td>
<td>2%</td>
<td>14%</td>
<td>12%</td>
<td>31%</td>
<td>41%</td>
<td>3.959</td>
</tr>
<tr>
<td>Do the prices of medical supplies offered by KEMSA fluctuate often?</td>
<td>19%</td>
<td>36%</td>
<td>26%</td>
<td>12%</td>
<td>7%</td>
<td>2.521</td>
</tr>
<tr>
<td>Does KEMSA offer price discounts?</td>
<td>15%</td>
<td>17%</td>
<td>21%</td>
<td>31%</td>
<td>16%</td>
<td>3.157</td>
</tr>
<tr>
<td>Does KEMSA have a pricing policy?</td>
<td>0%</td>
<td>7%</td>
<td>10%</td>
<td>50%</td>
<td>32%</td>
<td>4.074</td>
</tr>
<tr>
<td>Are you aware of KEMSA’s Pricing Policy?</td>
<td>7%</td>
<td>12%</td>
<td>13%</td>
<td>44%</td>
<td>24%</td>
<td>3.661</td>
</tr>
<tr>
<td>Are KEMSA prices affected by laws of demands and supply?</td>
<td>30%</td>
<td>18%</td>
<td>13%</td>
<td>26%</td>
<td>13%</td>
<td>2.744</td>
</tr>
<tr>
<td>Do KEMSA prices change depending on facility location?</td>
<td>29%</td>
<td>21%</td>
<td>7%</td>
<td>17%</td>
<td>26%</td>
<td>2.901</td>
</tr>
<tr>
<td>KEMSA has a price list which is given to all county pharmacists</td>
<td>6%</td>
<td>3%</td>
<td>12%</td>
<td>37%</td>
<td>43%</td>
<td>4.091</td>
</tr>
<tr>
<td>KEMSA prices are negotiated with the supplier/manufacturer</td>
<td>7%</td>
<td>12%</td>
<td>17%</td>
<td>41%</td>
<td>23%</td>
<td>3.628</td>
</tr>
<tr>
<td>KEMSA has a profit margin added to the cost of medical supplies</td>
<td>15%</td>
<td>18%</td>
<td>20%</td>
<td>36%</td>
<td>11%</td>
<td>3.099</td>
</tr>
<tr>
<td>Counties are involved in price setting at KEMSA</td>
<td>16%</td>
<td>25%</td>
<td>19%</td>
<td>25%</td>
<td>16%</td>
<td>3.000</td>
</tr>
<tr>
<td>KEMSA offers value for money services</td>
<td>4%</td>
<td>10%</td>
<td>14%</td>
<td>35%</td>
<td>37%</td>
<td>3.909</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>12%</td>
<td>16%</td>
<td>15%</td>
<td>32%</td>
<td>24%</td>
<td>3.395</td>
</tr>
</tbody>
</table>

36
4.4.1 Correlations between Affordability and UHC

A correlation analysis was conducted to determine sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage. The findings in Table 4.7 below indicate that affordability of medicines (r=0.684, p<0.05) has a positive and significant relationship with universal health coverage.

**Table 4.7: Correlations between Affordability and UHC**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Affordability</th>
<th>Universal Health Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordability</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>121</td>
</tr>
<tr>
<td>Universal Health Coverage</td>
<td>Pearson Correlation</td>
<td>.684**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>121</td>
</tr>
</tbody>
</table>

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

4.4.2 Regression Analysis between Affordability of Medicines and UHC

The researcher conducted a linear regression analysis so as to test relationship between affordability of medicines and UHC. The model summary findings are as shown in Table below. The findings indicate that affordability of medicine explain only 46.3% of the universal health coverage as represented by the R-squared. This therefore means that other aspects not studied in this study contribute only 53.7% of universal health coverage at KEMSA.

**Table 4.8: Regression Analysis between Affordability of Medicines and UHC**

<table>
<thead>
<tr>
<th>Model Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Affordability

The significance value in the Table 4.9 was 0.000 which is less than 0.05 thus the model is statistically significant in predicting on the affordability of medicines influence universal
Table 4.9: ANOVA between Affordability of Medicines and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>25.690</td>
<td>1</td>
<td>25.690</td>
<td>104.414</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>29.279</td>
<td>119</td>
<td>.246</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>54.970</td>
<td>120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage
b. Predictors: (Constant), Affordability

Table 4.10 shows that taking affordability of medicines to be constant at zero, universal health coverage will be at 0.444. Therefore, it can be concluded that a unit increase in affordability of medicine would cause an increase in universal health coverage by a factor of 0.684. The sig-value was less than 0.05 indicating a statistically significant. As per the regression results in Table 4.10 above the equation is as follows: Universal Health Coverage = 0.444 + 0.743 Affordability of Medicines.

Table 4.10: Coefficients between affordability of Medicines and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.444</td>
</tr>
<tr>
<td></td>
<td>Affordability</td>
<td>.743</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage

4.5 Monitoring and Evaluation Tools and Universal Health Coverage

The study sought to understand monitoring and evaluation tools and universal health coverage. On average most of the employees at KEMSA tend to agree that there is provision of monitoring and evaluation tools on universal health coverage this was supported by 36% of employees agreeing, 29% strongly agreed and a mean of 3.688. The results indicated that public facilities in Kenya autonomous in making procurement decisions in which 29% agreed 13% strongly agreed and a mean of 3.008 and that public
health facilities provide patient reports to KEMSA in which 31% agreed, 13% strongly agreed and a mean of 3.107 was reported. KEMSA train personnel in public health Facilities on Stock management 37% agreed, 24% strongly agreed and a mean of 3.479 and that the organization has effective data collection tools from the counties where 41% agreed, 29% strongly agreed and a mean of 3.793 was reported.

The results of the study showed that KEMSA sales representatives involved in data collection from the counties in which 42% agreed, % strongly agreed and a mean of 3.703 and that private suppliers of medicines and medical supplies collect data from counties where 28% agreed, 22% strongly agreed and a mean of 3.438 was realized. Donors e.g. USAID and Global fund collect data from public health facilities in Kenya in which 48% agreed 23% strongly agreed and a mean of 3.777 and that donors e.g. USAID and Global fund train personnel on data collection in public health facilities in Kenya where 40% agreed 35% strongly agreed and a mean of 3.926.

The county pharmacists trained on re-order level where 36% of employees agreed 37% strongly agreed and a mean of 3.959 and that the organization have key performance indicators on data collection in which 33% agreed, 41% strongly agreed and a mean of 4.058 was reported. The organization data is helpful in forecasting stock levels in which 33% agreed, 48% strongly agreed and a mean of 4.157 and that the KEMSA set economic order quantities levels as a tool of measurement in which 31% agreed, 41% strongly agreed and a mean of 3.851 was reported. The summary of the findings on medical commodity management and sustainable drug supply is indicated in the Table 4.11.
### Table 4.11: Medical Commodity Management and Sustainable Drug Supply

<table>
<thead>
<tr>
<th>Question</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are Public Facilities in Kenya autonomous in making procurement decisions?</td>
<td>15%</td>
<td>25%</td>
<td>18%</td>
<td>29%</td>
<td>13%</td>
<td>3.008</td>
</tr>
<tr>
<td>Do public health facilities provide patient reports to KEMSA?</td>
<td>12%</td>
<td>22%</td>
<td>22%</td>
<td>31%</td>
<td>13%</td>
<td>3.107</td>
</tr>
<tr>
<td>Does KEMSA train personnel in Public Health Facilities on Stock management?</td>
<td>9%</td>
<td>19%</td>
<td>11%</td>
<td>37%</td>
<td>24%</td>
<td>3.479</td>
</tr>
<tr>
<td>Does KEMSA have effective data collection tools from the counties?</td>
<td>2%</td>
<td>16%</td>
<td>13%</td>
<td>41%</td>
<td>29%</td>
<td>3.793</td>
</tr>
<tr>
<td>Are KEMSA Sales Representatives involved in data collection from the counties?</td>
<td>6%</td>
<td>13%</td>
<td>12%</td>
<td>42%</td>
<td>26%</td>
<td>3.703</td>
</tr>
<tr>
<td>Do private suppliers of Medicines and Medical Supplies collect data from counties?</td>
<td>10%</td>
<td>7%</td>
<td>33%</td>
<td>28%</td>
<td>22%</td>
<td>3.438</td>
</tr>
<tr>
<td>Do donors e.g. USAID &amp; Global fund collect data from public health facilities in Kenya?</td>
<td>5%</td>
<td>7%</td>
<td>17%</td>
<td>48%</td>
<td>23%</td>
<td>3.777</td>
</tr>
<tr>
<td>Do donors e.g. USAID &amp; Global fund train personnel on data collection in public health facilities in Kenya?</td>
<td>3%</td>
<td>10%</td>
<td>12%</td>
<td>40%</td>
<td>35%</td>
<td>3.926</td>
</tr>
<tr>
<td>Are the County Pharmacists trained on re-order level?</td>
<td>3%</td>
<td>8%</td>
<td>15%</td>
<td>36%</td>
<td>37%</td>
<td>3.959</td>
</tr>
<tr>
<td>Does KEMSA have Key Performance Indicators on data collection?</td>
<td>1%</td>
<td>8%</td>
<td>17%</td>
<td>33%</td>
<td>41%</td>
<td>4.058</td>
</tr>
<tr>
<td>Is KEMSA’s data helpful in forecasting stock levels?</td>
<td>3%</td>
<td>7%</td>
<td>9%</td>
<td>33%</td>
<td>48%</td>
<td>4.157</td>
</tr>
<tr>
<td>Does KEMSA set Economic Order Quantities levels as a tool of measurement?</td>
<td>12%</td>
<td>2%</td>
<td>15%</td>
<td>31%</td>
<td>41%</td>
<td>3.851</td>
</tr>
</tbody>
</table>

**Average**                                                                                       | 7%  | 12%| 16%| 36%| 29%| 3.688 |

**4.5.1 Correlations Analysis between Monitoring tools and UHC**

The researcher conducted correlation analysis to determine sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage. The findings in Table 4.12 below indicate that monitoring tools ($r=0.730$, $p<0.05$) was found to be positive and had a significant relationship with universal health coverage.
Table 4.12: Correlations Analysis between Monitoring tools and UHC

<table>
<thead>
<tr>
<th></th>
<th>Monitoring</th>
<th>Universal Health Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>121</td>
<td>121</td>
</tr>
<tr>
<td>Universal Health Coverage</td>
<td>Pearson Correlation</td>
<td>.730**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>121</td>
<td>121</td>
</tr>
</tbody>
</table>

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

4.5.2 Regression Analysis between Monitoring tools and UHC

The researcher conducted a linear regression analysis so as to test relationship among variable on sustainability of the supply of quality and affordable medical supplies by KEMSA. The model summary findings are as shown in Table 4.13 below. The findings indicate that monitoring tools explain only 52.9% of the universal health coverage as represented by the R-squared. This therefore means that other aspects not studied in this study contribute only 47.1% of universal health coverage at KEMSA.

Table 4.13: Regression Analysis between Monitoring tools and UHC

<table>
<thead>
<tr>
<th>Model Summary</th>
<th></th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
<td>R Square</td>
</tr>
<tr>
<td>1</td>
<td>.730a</td>
<td>.533</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Monitoring

The significance value in the Table 4.14 was found to be 0.000 which is less than 0.05 thus the model is statistically significant in predicting how monitoring tools influence universal health coverage. The F critical at 5% level of significance was 2.344. Since F calculated is greater than the F critical value was 135.765 this shows that the overall model was significant.

41
Table 4.14: ANOVA Analysis between Monitoring tools and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>29.293</td>
<td>1</td>
<td>29.293</td>
<td>135.765</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>25.676</td>
<td>119</td>
<td>.216</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54.970</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage  
b. Predictors: (Constant), Monitoring

The results in Table 4.15 shows that taking monitoring tools to be constant at zero, universal health coverage will be at 1.521. Therefore, it can be deduced that a unit increase in monitoring tools would cause an increase in universal health coverage by a factor of 0.75. The sig-value was less than 0.05 indicating a statistically significant. As per the regression results in Table 4.10 above the equation is as follows; Universal Health Coverage = 1.521 + 0.875 Monitoring tools.

Table 4.15: Coefficients Analysis between Monitoring tools and UHC

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.521</td>
<td>.286</td>
<td>.573</td>
</tr>
<tr>
<td></td>
<td>Monitoring</td>
<td>.875</td>
<td>.080</td>
<td>.730</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Universal Health Coverage

4.6 Chapter Summary
The chapter has presented the results and findings of the study, from descriptive statistics the results shows some varying degree of relationship on the sustainability of universal health coverage. The findings of inferential statistics showed that sustainable funding had positive and significant relationship with universal health coverage, affordability of medicines had a positive and significant relationship with universal health coverage and monitoring tools was found to be positive and had a significant relationship with universal health coverage. The next chapter of the study presents the discussion, conclusions and recommendations of the study.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This chapter provides summary, discussions, conclusions and recommendations for the factors affecting sustainability of supply of medical supplies by KEMSA in the implementation of UHC. The discussions are based on the findings highlighted in the previous chapter and offers conclusion and recommendations on the study.

5.2 Summary
The general objective of the study was to analyze factors affecting the sustainability of the supply of quality and affordable medical supplies by KEMSA in the realization of Universal Health Coverage. The specific objectives were to: examine factors influencing the sustainability of the current funding model for purchase of essential medicines in the implementation of Universal Health Coverage, analyze factors which determine the provision of affordable medicines by KEMSA in the implementation of Universal Health Coverage and describe the medical commodity management tools in place to ensure sustainable drug supply in Kenya.

The researcher used a descriptive research design so as to understand the factors affecting supply of medicines by KEMSA in implementation of UHC in Kenya. The use of a case study approach was used so as to focus only on the role that KEMSA has to play in supplying of medical supplies for affordable medicines for Kenyan citizens. Descriptive research design was chosen since the researcher sought to understand the current factors influencing supply of medicines by KEMSA without influencing those factors or the respondents. The researcher made use of questionnaires to collect both qualitative and quantitative data. The data collected was then analyzed using Statistical Packages for Social Sciences (SPSS), descriptive statistics of means and percentages were used while inferential statistics was used to show relationship between identified factors and sustainability of UHC.

The population used was the whole of KEMSA staff, 341 staff and the four county pharmacists in the pilot counties of Isiolo, Kisumu, Machakos and Nyeri. The sample size selected was 186 KEMSA staff and 2 Chief County Pharmacist for Nyeri and Machakos. The KEMSA staff sample size was stratified as per job cadres and job functions.

The findings were that sustainability of the current funding model for KEMSA, in the supply of medical commodities, explains 57% of the successful implementation of UHC.
This shows that there are other factors that need to be studied other than the funding model to explain the success of UHC implementation. The study revealed that most KEMSA staff believe that the current funding received from MoH will be sufficient for implementation of UHC and further to that, donor funding will be required for successful implementation.

The affordability of drugs was found to have a positive relationship with UHC implementation; the staffs believe that KEMSA is able to offer the cheapest drugs in the market. The data collected also showed that the staffs believe that the KEMSA prices are not influenced by laws of demand and supply and that the prices don’t change with location of the facility. A small change in affordability of medicines will bring a greater than change in accessibility of health care.

The study also revealed that there are tools in place for monitoring the supply of essential medicine to the counties. The county sales representatives were found to be very resourceful in collecting data from the counties and the county pharmacists agreed that KEMSA does provide training on stock management. The use of data management tools was found to positively influence UHC implementation and therefore, the use monitoring and evaluation will greatly influence KEMSA’s success in supply of medicines for UHC success.

5.3 Discussion

5.3.1 Sustainable Funding for Purchase of Essential Medicines

Funding for purchase of essential medicines received from the National Treasury through the MoH was found to be sufficient for UHC implementation. This finding was in line with the studies previously conducted and the recommendation of the Abuja Declaration (2015) which encouraged governments to increase spending in health care. The funding received will be in terms of budgetary allocation. The government funding increased by 867% from FY 2002/3 to FY 2017/18. This explains why KEMSA feels that the current funding received will be able to sustain the purchase of medicines and technologies for all the 47 counties when UHC is implemented throughout the country (Njuguna & Wanjala, 2019).

The findings that the strategic partners e.g. USAID, Global funds and World Bank are in support of UHC gives a lot of confidence for KEMSA and this is so because previous findings have shown that the donors inject up to 22% of government expenditure in health care, off the budget (Njuguna & Wanjala, 2019). This is therefore why the KEMSA staff feel strongly that the donors are in support of UHC implementation.
KEMSA has performance indicators for UHC to ensure operations are in full gear for procuring, warehousing and distributing the essential medicines in good time. The findings are in line with the highlights of Khuluza et al. (2016) in a study of CMS in Malawi, Burkina Faso and even Tanzania that show that the transition of CMS from fully government funding to autonomous entities leads to improved performance, transparency and accountability. This is also true for KEMSA which since devolution transitioned from operating fully under the MoH and created a commercial division to supplement income for the entity. This led to a commercial business model that has led to improved operation as opposed to previously where income was guaranteed from the National treasury.

The findings on KEMSA’s warehouse capability and staff capacity to undertake the new challenge that is UHC were in tandem with a study conducted by UNICEF on the sustainability of KEMSA after devolution. The previous study showed that KEMSA has sufficient warehouse capacity for the consolidation of county and hospital orders which are then shipped out to the customer who ordered them in good time. The data collected indicated that the staffs are confident in their capacity to implement UHC in all counties as a result of the current business model which has seen KEMSA provide the counties with their hospital supplies.

The study findings also showed that the KEMSA staff are aware of the guiding principles of UHC. According to WHO, the two main objectives of UHC is for all individuals to have access to quality healthcare and not have to ‘break the bank’ when doing so (WHO, 2013). The respondents indicated that they understand these principles and are therefore ready to work towards achieving them. For UHC in Kenya to achieve the goals, there is need to sufficient funds to be utilized in procuring the needed medicines and health technologies. KEMSA was found to be aware of this and that is why the respondents felt that the current funding from MoH will be sufficient for UHC implementation.

The study revealed that the staffs were aware of the funding model of UHC. This agrees with the KEMSA Act which stipulates that the county governments are to establish drawing rights with KEMSA so as to ensure that there is a budgetary allocation from each county for purchase of essential medicines and health technologies. The use of the drawing rights design will ensure that there are no pending bills at the end of a financial year due to unplanned purchases by the county. This model of funding also allows KEMSA to make
budgetary planning and ensure that appropriate supply chain management is upheld (Kenya Medical Supplies Authority, 2019).

The study also showed that the donors are in support of UHC implementation in Kenya. This is true since the donors contribute to the health budget to a tune of 22% as previously highlighted in the case study by Njuguna & Wanjala. (2019). The contribution in purchase of medicines for HIV/AIDS and TB is largely funded by the donors. If these drugs are left out of the UHC plan, more that 1.5 Million of Kenya’s population of people living with HIV/AIDS will not benefit from UHC (Kenya National Health Financing, 2018).

The role that KEMSA has to play in UHC was found to be clear to most of the staff and this shows that KEMSA is well prepared for service delivery of medical supplies and health technologies. The need for communication in implementation of any project, not only UHC, contributes greatly to the success of it. The sensitization of the importance of teamwork and operational efficiency has been belabored by the KEMSA management and therefore explains the findings.

Overall the study findings indicate that there is a positive relationship between sustainable funding for procurement of essential drugs and UHC realization in Kenya. This means that with an increase in funding for purchase of essential medicine, there will be an increase in the sustainability of UHC. Further to that, the linear relationship between the factors of funding and UHC sustainability indicate that at the current funding level, UHC can be achieved, but with every increase in funding, UHC implementation will grow at ‘more than’ amount. There is a significant relationship between funding for the medical supplies and sustainability of UHC, factors relating to funding explain 57.1% of the sustainability of UHC.

5.3.2 Provision of Affordable Medicines and Universal Health Coverage

The findings that KEMSA has a pricing policy and that the KEMSA staff are well aware of this policy is in agreement with the sentiments put forward by the Pharmacy and Poisons Board (PPB Magazine, 2018). The journal details the plans that the MoH has put in place to ensure that the drugs that reach the counties are of good quality and in addition affordable. The use of a pricing policy by KEMSA allows for the regulation of medical supplies procured by the entity so as to avoid over pricing that will lead to expensive medical supplies. The realized price at the procurement level has to be within the price policy and regulations outline in the KEMSA policy document. If the realized price is
above, the tender is deemed none responsive and is done again. KEMSA staff are aware of this policy and are able to operate within its requirements.

The findings that there are price negotiations with the manufacturer concur with the findings by the Pharmacy and Poisons Board (PPB Magazine, 2018) that the MoH is setting up a committee to ensure that there is minimal cost building from the manufacturer hence resulting in very expensive drugs. The price negotiation done by KEMSA at the tender evaluation level is so as to ensure that quality drugs are procured from the lowest bidder. This ensures the manufacturers/distributors do not quote higher prices that will burden the citizens.

The county and hospitals are provided with a price list of all drugs available in KEMSA. This finding was found to agree with a previous study conducted in Narok County Referral Hospital which found that the drugs found in KEMSA are issued in a list so that the hospital pharmacist is able to know the drugs that are not available at the time of placing an order. This allows for the pharmacist to know the price and therefore be able to budget effectively (Muhia, Waithera, & Songole, 2017). The only challenge that exists is that KEMSA procures from list of essential drugs and may therefore not meet all the county needs. Affordability is however maintained in this way, that all prices are accessible from the KEMSA Logistics Management Information System.

KEMSA offers value for money services. This agrees with the findings by Pamela Steel Associates who conducted a study in KEMSA and found that KEMS is able to meet 80% of the county orders (UNICEF, n.d.). The service delivery is done to the facility door step and price does not change even with the change in distance covered. This has greatly assisted the MoH in ensuring drug affordability due to the fact that all counties in Kenya have a single price list. The shortages of drugs at the facilities is still a challenge for the counties and the hospitals, sometimes drugs are out of stock for over two weeks (Muhia et al., 2017). This may be contradictory to the data collected from KEMSA, since timely delivery is a main factor for value for money.

The counties are not involved in price setting by KEMSA was found to be true. This is in agreement with the KEMSA Act which mandates KEMSA to procure, warehouse and distribute medical and technological supplies to all public health facilities (UNICEF, n.d.). The procurement conducted by KEMSA is independent of any external influence and / interferences. This ensures a process that is transparent and free of personal interest and
corruption. The compliance with the Kenya Procurement and Asset Disposal Act (2015) has led to transparent procurement processes. The Act has set guidelines on procurement processes that are strictly adhered to in KEMSA.

The study showed that KEMSA prices do not fluctuate often. This can be explained by the fact that KEMSA procures drugs in bulk and 95% of its procurement is done through open public tenders, this is in agreement with the findings of Pamela Steele Associates (UNICEF, n.d.). The use of this form of procurement allows for the awards to be given to the lowest bidder and therefore ensure that prices are within market rates. The drug supplier signs a renewable framework contract for a period of three years. In this period, value for money audits are prescribed so as to ensure that the framework contract is beneficial to the procuring entity (Public Procurement and Asset Disposal Act, 2015) at the realized price during the tender award. This prevents price fluctuation.

The study found out that KEMSA offers price discounts to its customers. This was in line with the findings in the previous question where KEMSA was found to be offering the lowest price in comparison to its competition. The reason for this is as found out in the study by Pamela Steele Associates (UNICEF, n.d.) on KEMSA after devolution, where the entity awards 95% of its tenders through open tendering process. The compliance also to the Public Procurement And Asset Disposal Act (Public Procurement and Asset Disposal Act, 2015) has allowed for KEMSA to sell drugs to the counties at discounted prices.

Overall, the study found that the relationship between price affordability of drugs and UHC sustainability was positive. The factors relating to drug pricing and affordability contribute to 46.7% on UHC sustainability. This is important since drug affordability is one of the objectives of UHC. The linear relationship also showed that at the current level of drug affordability, UHC is still possible to implement but at every unit increase of drug affordability, UHC sustainability will increase by ‘greater than one’ unit.

5.3.3 Monitoring and Evaluation Tools and Universal Health Coverage

KEMSA is involved in training the personnel at the public health facilities on stock management. This is in line with the amended KEMSA Act of 2018 (Kenya Medical Supplies Authority, 2019) which mandates the entity to support the county governments in maintaining sound supply chain systems. The data collected shows that the county governments are receiving training from KEMSA in stock management issues.
There are data collection tools in place by KEMSA for collecting necessary data from the counties. The respondents indicated that this is true in the questionnaires filled. This shows that the authority is in agreement with the guidelines given by the KEMSA Act (Kenya Medical Supplies Authority, 2019) that requires KEMSA to collect information and provide regular reports to the national and county governments on the status and cost-effectiveness of procurement, the distribution and value of prescribed essential medical supplies delivered to health facilities, stock status and on any other aspects of supply system status and performance which may be required by stakeholders.

The sales representatives in the counties are instrumental in data collection. They serve as the contact between the entity and the ‘customer’ at the county level. The study conducted by Pamela Steele Associates, agrees with the findings (UNICEF, n.d.). The UNICEF sponsored case study, found that the sales team in KEMSA was able to keep track of the counties’ stock levels. The LMIS is able to provide data to the counties on the stocks available to them but the stock levels at the counties are not visible to KEMSA in this information system. This therefore makes the sales representatives very key in data collection.

KEMSA sets re-order levels based on data on drug consumption collected from the counties. This was a finding from the KEMSA respondents who agreed that the economic order level is based on data collected from the counties. In the amended KEMSA Act (Kenya Medical Supplies Authority, 2019), the board of directors in KEMSA will have a member representing the council of governors. This representation will allow for county interests to be met and represented in KEMSA. This will allow for KEMSA and the counties to work in tandem and to allow the county to voice their challenges in drug ordering. The data collected by the sales representatives is used for setting of reorder levels by KEMSA.

The study showed that public facilities in Kenya are autonomous in making procurement decisions. This was contrary to the findings of Barasa et al, (2017) where post devolution, the public health facilities autonomy in ordering of drugs was reduced. The findings of Barasa et al,(2017) show that he hospitals have to consolidate their drug requirements, forward them to the chief county pharmacists who will then place the order with KEMSA depending on the budget allocation.
Public health facilities were found to not make patient reports to KEMSA. this is true since the hospitals are required to provide data on the District hospital information system and also through the LMIS system. The patient information availed will have guidelines as set by the eHealth policy document which is a resource document for the MoH (Ministry of Health Kenya, 2016)

The study revealed that private sector stakeholders collect data on drug supply in the counties. MEDS has been listed as a potential provider of essential medicines and healthcare technology for primary health care in Kenya. This was shown in a study conducted by ECHO International so as to create a guideline for procurement of medicines in Kenya. The study showed that MEDS was able to collect data on complaints in the counties and respond efficiently to them (Manjit Kaur; Sarah Hall, 2002)

The donors were found to collect data from the counties and equip the county personnel with data collection training. This is true and is in agreement with multiple studies conducted before and especially on done by Academic Model Providing Access to Healthcare (AMPATH) with the aim of stimulating the implementation of similar models elsewhere to ensure sustainable access to quality and affordable medications in similar LMIC settings. The study focused on data collection in district hospitals in Eldoret county and also ensured the equipping of staff at those hospitals with skills on collecting and reporting on drug availability at their respective health centers (Manji et al., 2016). This was done so as to create a back up to the MoH in establishing the revolving fund model as a way of sustainable funding by the donors at the county level.

The study also showed that KEMSA has key performance indicators for UHC. this is true since the performance of KEMSA is directly tied to the realization of one of the objectives of UHC, which is having affordable medicines accessible to all citizens of the respective countries. The performance indicator is pegged on timey delivery of medical supplies to all counties (Kenya Medical Supplies Authority, 2019).The overall findings were that the monitoring tools were found to have a positive and significant relationship with the sustainability of UHC in Kenya. The tools that are in place for monitoring drug affordability and accessibility explain 53% of the sustainability of UHC and in addition to that, an increase in factors relating to monitoring of UHC will lead to a ‘greater than’ one increase in sustainability of UHC.
5.4 Conclusions

5.4.1 Sustainable Funding for Purchase of Essential Medicines

The study concluded that the sustainable funding for purchase of essential medicines has a significant influence on the successful implementation of UHC in Kenya. In addition, KEMSA has in place the staff capacity and warehouse capacity that is required for the task of UHC implementation. The warehouse capacity is sufficient and this will allow for storage and repackaging of all drugs needed by the counties.

The strategic partners that are in KEMSA are involved in part funding of the implementation of UHC. The strategic partners were also found to be resourceful in data collection from the counties and also in training personnel on supply chain management at the health facilities. This will enable to counties to procure the drugs that are required in time to avoid stock outs and expiry due to overstocking.

KEMSA’s financial position, according to the study, will improve on implementation of UHC. This is may be as a result of the increased service delivery to the counties which will translate to increased pulling to the drawing rights allocated to the counties. The awareness of the funding model by the KEMSA staff and the county pharmacists was found to be high and this will ensure that the implementation of the universal coverage is carried out efficiently.

5.4.2 Provision of Affordable Medicines and Universal Health Coverage

In terms of provision of affordable medicines and pharmaceutical supplies and the linkage to universal health coverage, the study concludes that affordability of drugs has a significant positive relationship with sustainability of UHC.

This is as a result of the KEMSA pricing policy is well communicated to all staff and the county pharmacists. The policy is used as a tool of monitoring prices of drugs and that is why the price list of all available drugs is issued to all counties. The study concludes that KEMSA is able to offer value for money services to its customers and this is because KEMSA is able to offer price discounts for essential drugs. In addition to this, the study concludes that prices of drugs do not change with change of geographical location of the customer and therefore drugs are available to all Kenyans at the same purchase price. Prices offered by KEMSA were also found not to be affected by laws of demand and supply and do not therefore fluctuate seasonally.
5.4.3 Monitoring and Evaluation Tools and Universal Health Coverage

The study concluded that the monitoring and evaluation of drug supply is essential for sustainable UHC implementation. This was evidenced by the finding that KEMSA has in place UHC key performance indicators. The performance indicators were on data collection and are useful in measuring KEMSA’s performance.

The entity also provides training of the county personnel on commodity management through the involvement of the sales representatives in data collection. The sales representatives have crucial information which is used to make demand and quantification decisions for KEMSA such as setting economic order quantities. KEMSA also has effective data collection tools, especially the online tool known as the LMIS. The data that is collected by KEMSA is also useful in forecasting for the future procurements and therefore improve supply chain efficiency.

The study also concludes the donors train the county personnel on data collection and that they too, collect data from the health facilities. Private stakeholders were also found to be collecting drug availability data from the counties possibly for their own procurement plans. This shows that the counties are the main source of data on drug accessibility and supply.

5.5 Recommendation

5.5.1 Recommendations for Improvement

5.5.1.1 Sustainable Funding for Purchase of Essential Medicines

The UHC roll out by the time the study was conducted had only been in four counties out of the 47 counties in Kenya. The funds from MoH and the donors were found to be sufficient at the for the stated counties and the study therefore recommends that the MoH maintains the current funding model for KEMSA so as to facilitate the effective supply of quality and affordable medicines. The donor funding has been shown to be essential for UHC and therefore the study recommends for steady flow of funds from the donors for success of UHC.

The staff and warehouse capacity was found to be adequate for UHC implementation at the time of the study. The study recommends that management maintain optimal staff and warehouse capacity as necessitated by the funds allocated for UHC implementation.
5.5.1.2 Provision of Affordable Medicines and Universal Health Coverage

KEMSA pricing policy is well communicated to all KEMSA and county staff and it is in use to prevent price inflation of medical commodities. The price list should continue to be provided to the customers on the LMIS platform for ease of accessibility and ordering. To ensure that KEMSA prices remain competitive, the entity should continue engaging in price negotiations with the supplier to ensure that procurement done brings about realization of the lowest bid prices. KEMSA should continue ensuring that there are minimal price fluctuations for the drug prices and that all counties are able to procure drugs at similar prices despite difference in geographical distance.

5.5.1.3 Monitoring and Evaluation Tools and Universal Health Coverage

The study concludes that there are tools in place for monitoring UHC implementation, which have been put in place by KEMSA. This has been done through the LMIS platform which has allowed for ease of access between KEMSA and the county pharmacists. The study concludes that the data collected is useful during economic order setting process by KEMSA. The training of county pharmacists on stock management shows that UHC implementation will be sustainable at the county levels since the counties have been equipped in data management as part of stock management. The data being collected by from the counties by donors who are also partly funding UHC will be useful in ensuring sustainable procurement of essential drugs by KEMSA and inform the funding levels for the same.

5.5.2 Recommendation for further studies

The study focused on KEMSA and data was collected from its employees and two county pharmacists. This limited the results of drug supply and UHC implementation to the views of the selected respondents. Therefore the study recommends similar studies to be carried out with a view of the counties who are the customers to KEMSA and the MoH who are in charge of implementing UHC in Kenya. The study focused on only three variables and therefore could not analyze the other factors that influence sustainability of supply of medicines for UHC implementation. Factors like the staff qualification and change of political regimes also influence UHC implementation in other countries. Future scholars need to conduct studies on these factors, since they were not covered in this study.
REFERENCES


just a donor fad or a catalyst towards comprehensive health-care reform?,
(September 2010), 153–156. https://doi.org/10.2471/BLT.10.077339


Samuel, O. (2013). JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY SCHOOL OF HUMAN RESOURCE DEVELOPMENT PROCEEDINGS OF FIRST SHRD ANNUAL RESEARCH CONFERENCE.


The Kenya Medical Supplies Authority Act. (2013), (20), 511–529.


APPENDICES

APPENDIX I: LETTER TO CORRESPONDENTS
30th March 2019

Christine N. Mwangi
United States International University-Africa
Chandaria School of Business
Nairobi, Kenya

Dear Sir/Madam

REF: PARTICIPATION IN SURVEY
I am a graduate student pursuing a Master in Business Administration (MBA) in USIU-A. In partial fulfilment of the requirement of this degree, I am conducting a research on implementation of UHC in Kenya. The study will investigate the sustainability of UHC funding in the case of Kenya Medical Supplies Authority (KEMSA).
I would like to request for your participation in this research by filling in the questionnaire. Kindly to not indicate your name in any part of this questionnaire. The data collected will be handled with confidentiality and will only be used for purpose of the study.
For any questions or clarification, feel free to contact me at christinamwangi@gmail.com or on 0727 481 905.
APPENDIX II: QUESTIONNAIRE
SECTION ONE: GENERAL INFORMATION

1. Please indicate your Gender?
   Male ( )  Female ( )

2. Please tick your Age
   Below 25 ( )  26-35 ( )  36-45 ( )  46-55 ( )  56 and Above ( )

3. What is your highest academic qualification?
   Certificate ( )  Diploma ( )  Degree ( )  Masters ( )  PhD ( )

4. What is your Cadre/Job Title?
   Chief County Pharmacist ( )
   Medical Officer ( )
   Clinical Officer ( )
   Administrative Officer ( )
   Nurse ( )
   Data Clerk ( )
   KEMSA Management ( )
   KEMSA Field Sales Representative ( )
   Other ( )

5. Which process / activity have you participated in since the roll out of UHC implementation?
   Data collection on demand and quantification of county needs ( )
   Data collection of complaints from hospitals/county ( )
   Processing of County / hospital orders ( )
   Receipt of Medicines and Medical supplies ( )
   Ordering of Medicines and Medical Supplies ( )
   Budgetary Process ( )

6. Indicate how long you have been in this position.
   Less than 1 year ( )  1-3 years ( )  4-6 years ( )  7-9 years ( )
10 years and above ( )

SECTION TWO: FUNDING MODEL OF KEMSA

7. Please tick on the provided scale so relating to the current funding model of KEMSA.

SD- Strongly Disagree, D- Disagree, N-Neutral, A-Agree, SA-Strongly Agree

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<thead>
<tr>
<th>No.</th>
<th>Scale</th>
<th>SD</th>
<th>D</th>
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<th>A</th>
<th>SA</th>
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<tbody>
<tr>
<td>1</td>
<td>KEMSA funding from MOH is sufficient for UHC implementation</td>
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<td>2</td>
<td>Donor funding is necessary for KEMSA to fulfil its mandate in UHC</td>
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<tr>
<td>3</td>
<td>KEMSA role in UHC implementation is clear to all</td>
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<td>4</td>
<td>KEMSA has the staff capacity needed to implement UHC</td>
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<td>5</td>
<td>KEMSA has plant/warehouse capacity to service UHC count/facility orders</td>
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<td>6</td>
<td>KEMSA staff are well aware of the guiding principles in UHC</td>
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<td>7</td>
<td>KEMSA has capacity to fully service county needs</td>
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<td>8</td>
<td>KEMSA’s Financial Position will improve with UHC Implementation</td>
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<td>9</td>
<td>KEMSA has performance Indicators for UHC</td>
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<td>10</td>
<td>KEMSA is aware of the UHC Funding Model</td>
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</tbody>
</table>
KEMSA’s Strategic Partners are in support of UHC

KEMSA’s Strategic Partners are supplementing Government Financing for UHC

SECTION THREE: PRICE REGULATION AND DRUG AFFORDABILITY

8. Please tick on the provided scale so relating to the role that the private sector plays in UHC implementation.

SD- Strongly Disagree, D- Disagree, N-Neutral, A-Agree, SA-Strongly Agreet

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<th>No.</th>
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<tbody>
<tr>
<td>1</td>
<td>Does KEMSA offer the cheapest the drugs in comparison with its competition?</td>
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<td>2</td>
<td>Do the prices of medical supplies offered by KEMSA fluctuate often?</td>
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<td>3</td>
<td>Does KEMSA offer price discounts?</td>
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<td>4</td>
<td>Does KEMSA have a pricing policy?</td>
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<td>5</td>
<td>Are you aware of KEMSA’s Pricing Policy?</td>
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<td>6</td>
<td>Are KEMSA prices affected by laws of demands and supply?</td>
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<td>7</td>
<td>Do KEMSA prices change depending on facility location?</td>
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<td>8</td>
<td>KEMSA has a price list which is given to all county pharmacists</td>
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<tr>
<td>9</td>
<td>KEMSA prices are negotiated with the supplier/manufacturer</td>
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</tbody>
</table>

63
KEMSA has a profit margin added to the cost of medical supplies

Counties are involved in price setting at KEMSA

KEMSA offers value for money services

SECTION FOUR: COMMODITY MANAGEMENT TOOLS FOR UHC IMPLEMENTATION

1. Please tick on the provided scale so relating to the tools used by KEMSA in Monitoring and Evaluation for the purpose of UHC implementation.

SD- Strongly Disagree, D- Disagree, N-Neutral, A-Agree, SA-Strongly Agree

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<tr>
<th>No.</th>
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<tbody>
<tr>
<td>1</td>
<td>Are Public Facilities in Kenya autonomous in making procurement decisions?</td>
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<td>2</td>
<td>Do public health facilities provide patient reports to KEMSA?</td>
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<td>3</td>
<td>Does KEMSA train personnel in Public Health Facilities on Stock management?</td>
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<td>4</td>
<td>Does KEMSA have effective data collection tools from the counties?</td>
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<td>5</td>
<td>Are KEMSA Sales Representatives involved in data collection from the counties?</td>
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<td>6</td>
<td>Do private suppliers of Medicines and Medical Supplies collect data from counties?</td>
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<td>7</td>
<td>Do donors e.g. USAID &amp; Global fund collect data from public health facilities in Kenya?</td>
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<td>8</td>
<td>Do donors e.g. USAID &amp; Global fund train personnel on data collection in public health facilities in Kenya?</td>
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<td>9</td>
<td>Are the County Pharmacists trained on re-order level?</td>
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<td>10</td>
<td>Does KEMSA have Key Performance Indicators on data collection?</td>
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<td>11</td>
<td>Is KEMSA’s data helpful in forecasting stock levels?</td>
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<td>12</td>
<td>Does KEMSA set Economic Order Quantities levels as a tool of measurement?</td>
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