MONITORING AND EVALUATION PRACTICES ON PERFORMANCE OF HEALTH COMMODITIES SUPPLY CHAIN SYSTEM IN TANZANIA: A CASE STUDY OF PUBLIC HEALTH FACILITIES IN DODOMA REGION

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN MONITORING AND EVALUATION (MAME) DEPARTMENT OF ECONOMICS AND COMMUNITY ECONOMIC DEVELOPMENT OF THE OPEN UNIVERSITY OF TANZANIA

2023

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by The Open University of Tanzania a dissertation entitled, "**The Role of Monitoring and Evaluation Practices on Performance of Health Commodities Supply Chain System in Tanzania: A Case Study of Public Health Facilities in Dodoma Region"** in partial fulfillment of the requirements for the award of Degree of Masters of Arts in Monitoring & Evaluation (MA&ME).

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Dr. Noel Matemba

(Supervisor)

17/11/2023

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Date

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DECLARATION

I, **Winifrida Edwin Emmanuel**, declare that the work presented in this dissertation is original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfillment of the requirement for the Degree of Arts in Monitoring & Evaluation (MAME).

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Signature

17/11/2023
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Date

DEDICATION

I dedicate this work to my mother Joyce. P. Nchimbi, my siblings, and my friends for their invaluable support, encouragement, and inspiration throughout the entire research period. I am grateful to all of them for being with me throughout this journey.

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The completion of this dissertation wouldn't be a reality without a handful of support from different people. I would first and foremost like to extend my humble thanks to the Almighty God for the plenty of blessings and graceful protection for me and my entire family during my entire studies at the Open University of Tanzania. Specifically, I present my thanks to my supervisor Dr. Noel Matemba of the Open University of Tanzania for the directions, guidance, and support offered from the time of proposal writing to the final actualization of this work.

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ABSTRACT

The study examined Monitoring and Evaluation (M&E) Practices on the Performance of the Health Commodities Supply Chain System in Tanzania: A Case Study of Public Health Facilities in the Dodoma Region. Specifically, the study sought to assess the current existing M&E practices implemented within the health commodities supply chain system. Identify the key challenges and barriers in implementing M&E practices within the health commodities supply chain system. examine the impact of inadequate M&E practices on the performance of the supply chain system. Identify recommendations and strategies to strengthen M&E practices within the health commodities supply chain system in Dodoma City Council. The study was guided by two theories which include; program theory and general system theory. The study adopted a cross-sectional research design and mixed-method research approach. A structured questionnaire and interview were used to collect qualitative and quantitative data from 79 respondents. A sample of respondents was selected based on their involvement in the health commodities supply chain from public health facilities in Dodoma City Council. Data analysis for quantitative was done using MS Excel (Pivot Table) and SPSS version 20 whereby qualitative data were analyzed using content analysis. Data was presented using descriptive statistics and qualitative statements from the respondents. The findings of this study showed that public primary health facilities do not practice M&E due to a lack of knowledge and skills, a shortage of professional human resources, and the allocation of funds for M&E activities. The findings of this study are expected to advance knowledge and form a base for further studies on Health commodities supply chain systems and monitoring and evaluation. The study recommends more knowledge on M&E should be provided to public healthcare workers.

Keywords: *Performance of health commodities supply chain system, Monitoring and Evaluation practices.*

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LIST OF ABBREVIATIONS

AMC	Average Monthly Consumption
CHMT	Council Health Management Team
DHFF	Direct Health Facility Financing
DHIS2	District Health Information System 2
E9	Epicor 9
e-LMIS	Electronic Logistics Management Information System
ETL	Electronic TB and Leprosy
GOTHOMIS	Government of Tanzania Hospital Management Information System
HSSP V	Health Sector Strategic Plan V
ILS	Integrated Logistics System
IMPACT	Information Mobilized for Performance Analysis and Continuous Transformation
KPIs	Key Performance Indicators
LMIS	Logistics Management Information Systems
LMS	Logistics Management Services
MEL	Monitoring, evaluation, and learning
MIS	Management Information Systems
MoH	Ministry of Health
MSD	Medical Stores Department
PO-RALG	President's Office, Regional Administration, and Local Government
SDP	Service Delivery Points
VIMS	Vaccines Information Management System

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In the 21st century, the world has witnessed a major technological expansion of health commodities supply chain systems from paper-based to the invention of computer and supply chain electronic systems; the growth in globalization has influenced the development of supply chain management and performance (Meixell & Gargeya, 2005). A well-functioning health commodity supply chain system is critical in the provision of quality health services and guarantees consistence availability and affordable health commodities at the service delivery point (Yadav, 2015).

The health commodities supply chain system has been a global agenda toward achieving sustainable development goals, specifically Sustainable goal number three on its eighth target which states that "achieve universal health coverage including financial risk protection access to quality and affordable essential medicine and vaccine for all" (Nations, 2018) Either with the growing strategies on public health sector monitoring and evaluation (M&E) is an essential component of any project, program or policy implementation. It provides a systematic way to track progress toward achieving goals, identify areas for improvement, and assess the effectiveness of intervention (Reynolds & Sutherland, 2013).

Monitoring and evaluation practices typically involve collecting and analyzing data to measure performance and impact, and using information to inform decision-making, most common Monitoring and evaluation practices include; establishing

clear goals and objectives; developing indicators; collecting data; analyzing data; reporting and dissemination and using findings to make informed decision making. Monitoring and Evaluation practices play a crucial role in the performance of the health commodities supply chain system. Health commodities supply chain systems are complex and involve the procurement, storage, transportation, and distribution of health commodities such as medicines, vaccines, and medical supplies. Monitoring and Evaluation practices help to ensure that these systems are operating efficiently and effectively and that they are meeting the needs of the population they serve by ensuring effective performance of health commodities through availability, accessibility, and high quality and that they are reaching the population.

Performance of the health commodities supply chain and monitoring and evaluation enhancing effectiveness and efficiency of quality health services, despite various efforts the unsatisfying performance of the health commodities supply chain at public health facilities remains extremely low (Vledder et al., 2019). Tanzania like other developing countries has been facing an ineffective supply chain system which resulted in health commodities unavailability, stock out, waste, and loss due to expires and damages (Ministry of Health, 2017).

The National Key Performance Indicators report (2022) reports that all clients who accessed public health facilities experienced a lack of availability of essential health commodities by Primary Health facilities at 57%; Regional Referral Hospitals at 24%; Tertiary Hospitals at 46%, Tanzanians experience lack of access of essential Health medicines by 42% which contribute to people suffering and mortalities. Unpredictable availability of health commodities deteriorates health provider’s

performance and service utilization by clients which rallies client satisfaction; Low availability and accessibility of essential health commodities has been a tight knot in comprehending the efficient performance of the health supply chain system in Tanzania.

Studies conducted in the supply management system, especially in Tanzania highlighted contributing factors to huddles in supply chain performance and poor access to health medicines include; budget constraints; delay in delivery; lack of inventory tools; poor data quality; shortage of human resources, and lack of of of Information use (Kuwawenaruwa et al., 2021) Data quality assessment report which was conducted on September 2022 in ten Regions (Dar es Salaam, Tanga, Mwanza, Ruvuma, Kigoma, Dodoma, Kagera, Arusha, Rukwa and Mtwara shows that 43% out of 80 visited facilities have no qualified supply chain personnel both pharmaceuticals and laboratory something which contributes to low performance of supply chain, either financial resource is allocated based on population of particular area which underrating type and magnitude of diseases at a particular place (Health, 2022)

In summary, the performance of the health commodities supply chain system both globally and in developing countries such as Tanzania has not been on the best practices, especially in areas such as monitoring resource allocation for procurement of health commodities; proper inventory management (monitoring stock status): monitoring and evaluation on health commodities supply chain personnel; integration of different supply chain systems with service and financial system and health commodities data use and dissemination; to influence the performance of Supply

Chain System (Ministry of Health, 2020).

1.2 Statement of Research Problem

Globally, the health commodities supply chain system plays a pivotal role in ensuring the availability of necessary medical supplies and equipment. Efficient management of the supply chain is crucial in supporting the delivery of effective healthcare services to the community. However, there are growing concerns that hinder the performance of the supply chain system which seemingly suffers from various inefficiencies and inconsistences. In the context of Tanzania's health commodities supply chain system, there is a significant low availability, stock-outs of critical health commodities, delayed deliveries, mismanagement, and wastage of resources which all play an important part in enhancing the performance of the health commodities supply chain.

The Government have been implementing various initiative to improve the availability of health commodities, reduce stockouts, and minimize financial and wastage of resources such as increasing financial allocation for procurement of commodities for FY 2021/2022; renovating health facility infrastructures such as Stores for health commodities storage; improvement in procurement from quarterly to Bi-monthly ordering although these initiative have not been showing positive impacts as but still the performance of health commodities supply chain system measure through availability of health commodities is 43% (Printz et al., 2013a).

Hence, this study aims to understand the role and impact of Monitoring and evaluation practices on the performance of the health commodities supply chain system, it will examine the current monitoring and evaluation practices, identify gaps

in these practices, assess the impact of these gaps and how they affect the overall performance of health commodities supply chain system, ultimately providing a recommendation for improvement and enhance both effectiveness and efficiency of health commodities supply chain system by increasing health commodities availability and reduce stock-outs in the Country as M&E is the backbone of successful health programs. (Tengan & Aigbavboa, 2021).

1.3 General Objectives

To explore and analyze monitoring and evaluation practices on the performance of health commodities supply chain systems in Public health facilities in Tanzania.

1.4 Specific Objectives of the Study

The Objectives of this Study were;

i. To asses the existing Monitoring and Evaluation practices implemented within the health commodities supply chain system in Dodoma City Council.
ii. To identify the key challenges and barriers in implementing M&E practices within the health commodities supply chain system in Dodoma City Council.
iii. To examine the effect of inadequate M&E practices on the performance of the supply chain system in Dodoma City Council
iv. To identify recommendations and strategies to strengthen M&E practices within the health commodities supply chain system in Dodoma City Council.

1.5 Research Question

This study aims to answer the following questions

i. What are the current Monitoring and Evaluation (M&E) practices

implemented within the health commodities supply chain system in public health facilities?

ii. What are the key challenges and barriers faced in implementing M&E practices within the health commodities supply chain system in public health facilities?

iii. What is the impact of inadequate M&E practices on the performance of the health commodities supply chain system?

iv. What are the recommendations and strategies to strengthen M&E practices within the health commodities supply chain system?

1.6 Significance of the Study

The current health sector has several guidelines and policies and in Tanzania, policies and guidelines have gone deeper into particular health programs i.e. health commodities supply chain guidelines and policies either all established guidelines focus on Monitoring and evaluating documents rather than monitoring and evaluation practices to the programs and health facilities, therefore this study is expected to benefit different stakeholders from National to facility level both health and non-health related as follows;

The study findings will benefit healthcare workers at primary health facilities by efficiently and effectively using health commodities finances allocated at a particular facility and reducing waste, expiries, and stockouts by frequently monitoring and evaluating patients and the use of health commodities. The study findings will also inform health management teams on how monitoring and evaluation practices can

help improve the quality of health services at primary health facilities. The study will further help inform policymakers, implementing Ministries, and health-related stakeholders to improve and establish a monitoring and evaluation system that will enforce the practice to tackle the problem of low availability of health commodities by bridging the gap of what exactly is required to achieve the objective. Lastly, the study findings will inform other researchers, academician and supply chain-related professionals of the need to conduct more studies on the area of health commodities supply chain and Monitoring and evaluation

1.7 Scope and Limitation of the Study

This study was conducted in Dodoma City Council, it will involve a health management team and health care workers at a primary public health facility. The study has covered healthcare workers who are directly and indirectly linked to the health commodities supply chain system but also it will involve data extraction from an electronic logistic management information system (MIS) and data analysis using Excel Power Pivot.

The findings and recommendations of this study will help primary health facilities, management teams, and ministries in understanding the role of monitoring and evaluation in the performance of the health commodities supply chain system especially in primary health care but also build accountability and transparency at all levels. The limitation of this study involved time constraints, some health facilities were hard to reach although they are allocated by the city council; but also, most visited facilities had less numbers of healthcare workers at facilities.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter presents definitions of key concepts and, a review of theoretical and empirical literature related to the study. In addition, the chapter presents the conceptual framework for the study that explains the interrelation between variables as well as the research gap for the study.

2.2 Conceptual Definitions

2.2.1 Monitoring and Evaluation Practices

Monitoring and Evaluation practices refer to the patterns that have been identified to be efficacious in improving project performance. Such practices have been accepted by practitioners as an effective way to implement M&E in different projects or programs (Webb and Elliot, 2000).

2.2.2 Performance of Supply Chain System

Performance in the supply chain system refers to what needs to be improved or maintained to ensure timely availability of health Commodities (Health,2019). In observing Performance in the area of Health Commodities their guidelines identify how to measure the Performance of the Supply Chain system by using different indicators one being the availability of health commodities.

2.3 Theoretical Literature Review

2.3.1 Program Theory

Program theory is the theory of the cause and effect of the intervention, it explains

why intervention is supposed to work by describing the chain of cause and effect that leads to the achievement of a specific goal. The cause and effect take into consideration **"if X, then Y"** (Bourgeoise, 2011)**.** Policymakers, program planners, project managers, and other analysts use logical models to communicate succinctly and visually the underlying theory of their policies and programs including that of the availability of Health commodities (Naimoli et al., 2014).

In this study, program theory has been applied to assess the cause of "monitoring and evaluation practices" can affect the performance of the health commodities supply chain system at public health facilities both positive impacts and negative impacts which can be detrimental as the logic models this has provided a conceptual framework for monitoring and evaluation practice and bring together other available existing intervention to fill the gap on low performance of health commodities in supply chain system and increase availability and quality of health services.

2.3.2 General System Theory

System theory was introduced by Ludwig von Bertalanffy in 1940 for biological science which was later adopted into other fields and modified into general system theory (Rubino, 1950). General system theory identifies the importance of definitive boundaries that separate a system from its environment and allow inputs and outputs out of the system. General system theory implies all systems are interrelated parts constituting an ordered whole and each sub-system will improve the whole. The general system theory provides an opportunity to distinguish subsystems and variables that operate within the supply chain system and leads it to a better understanding of the dynamics of the supply for efficient and effective use of health

commodities (Mwele, 2017)

In this study general system theory has been used to identify different inputs, especially in monitoring and evaluation practices to explain how they influence the performance of the health commodities supply chain system that input, process, outcome, and output these four element are working interdependent to ensure effective performance of supply chain by integrating it with monitoring and evaluation practices Considering Tanzanian context especially in Public Health facilities are facing poor health infrastructures which also include availability of health commodities store especially at lower level facilities such as Dispensaries.

2.4 Empirical Literature Review

2.4.1 The existing Monitoring and Evaluation practices implemented within the health commodities supply chain system

Monitoring, evaluation, and review are essential functions to ensure that priority health actions outlined in the National Health policies, strategies, and plans are implemented as planned against stated objectives and desired results (O'Neill et al., 2016). An efficient supply chain system in public health facilities is a critically important factor for continuous access to consistent essential health commodities. Access to affordable medicines is essential to achieve universal health coverage with monitoring and evaluation it provides a basic measurement system and accountability mechanism in the health commodities supply chain system, however for the case of China health care has been diminished since the market-based reform in the healthcare sector in the late 1970s, (Yang et al., 2020) high cost of medical products was regarded as a major barrier during that period although between 2009

to 2011 China established National Essential Medicine Program as series of supporting implementation of targeting medicine pricing, procurement, prescribing and reimbursement including establishment of province based competitive bidding system was established to obtain low price (for Tanzania we have prime vendor system).

As for China, the study meant to evaluate the price and availability of essential Medicine in China which is one of the challenges that contribute to low performance of the supply chain especially in public health facilities (Yang et al., 2020) The study used the mixed cross-sectional and longitudinal study to evaluate the price and availability of medicine in China whereby a standard methodology developed by WHO and Health Action International was used; findings showed that there was Low availability of essential medicines in both public and private sector (mean public 4.29%-32.87; private 13.50%-43.75%) and Un-equal price distribution across facilities (Yang et al., 2020).

The identified gap of the study includes that it has accessed the health private sector while in this study researcher has intended to focus on public health facilities only but also study did not link Monitoring and evaluation practices on ensuring there is performance of supply chain by measuring availability on studied location. Added value to the current study includes that the current study is going to asses essential medicine availability, supply chain system, and how influenced M&E practices but also is going to put much effort into public health facilities rather than private health facilities.

2.4.2 Key challenges and barriers in implementing M&E practices within the health commodities supply chain system

The World Health Organization defines access to medicine as a priority for citizens, where a functioning medicine supply chain is necessary, it needs to be available at all times in adequate amounts, in appropriate dosage and quality but also at affordable prices for individuals and communities (Schöpperle, 2013). Supply chains in most sub-Saharan Africa are faced with different challenges including poor information; inadequate storage facilities and lack of management procedures (Schöpperle, 2013) it's estimated that two billion people do not have access to medicines and four million lives per year could be saved in Africa and Southeast Asia with appropriate treatment and medicine (Marks, 2012).

Nigeria one of the sub-Saharan African national health systems has been faced with typical challenges that impact the supply chain system and that include inadequate forecasting, insufficient funds, delays in funding disbursement, and long lead times, especially in tendering and manufacturing (Schöpperle, 2013) identified a gap in this study one been it has not accessed different supply chain system and how they are contributing to the performance of supply chain but it has great value to the study at hand since it has touched most of areas that this study will focus on. The study used cross- a cross-sectional method where findings identified the main challenges, and outlined good practices and recommendations approaches on how to improve the performance of the supply chain by ensuring the availability of medicine.

Access to essential health commodities has been contingent upon a well-functioning and performing supply chain system from the manufacturer to the end user. For

several years, the public health system has been receiving increasing attention and priority to overcome its challenges. According to WHO developing countries have been faced with persistent challenges including the availability of essential medicine, whereby for WHO regions there was a low availability range from 29.4% to 54.4% (Vledder et al., 2019). According to the study conducted in Zambia on improving the Supply chain for essential drugs in low-income Countries: results from large-scale Randomized Experiment shows that despite increasing investments in the procurement of essential medicine, their availability at health facilities remains extremely low in many low-income countries.

Health commodities supply chain performance is contributed from every stage from planning to the product reaching the clients, due to the economic change in Ghana there was a large impact on disease characteristics, cost of care, increasing public partner expectations, and potential changes in partners contribution to strengthen health commodities in the country. In addressing the challenge Ministry of Health decided to establish a Supply chain master plan that aims to guide in setting guiding policies, and interventions, along with corresponding implementation activities (Ghana, 2012).

2.4.3 Impact of inadequate M&E practices on the performance of supply chain system

One of the universal rights includes access to essential health commodities that are available and affordable, apart from that World Organization through sustainable development goals has outlined a framework that assists policymakers in improving access to essential health commodities, especially in low-income countries by 2030.

The study conducted in Eastern Ethiopia assessing availability, pricing, and affordability of essential medicine using a comprehensive analysis using WHO/HAI methodology found that only 16% of the surveyed medicine surpassed the WHO cut-off point of 80%, and overall percentage availability was found to be 3.6% (range 0.0- 31.7%) with both public and private contribution (Sisay et al., 2021).

The study used a cross-sectional study design and a standardized sampling methodology. The gap observed in this study is the study did not only assess the supply chain system in the country but also the role of Monitoring and evaluation played on the subject at hand but also the study was conducted for both private and public health systems for added advantage the study used cross-sectional method which has also been used in this current study. Tanzania like many other developing countries has been facing different supply chain challenges, to ensure the performance of the supply chain system delivery system from a central “push kit” to a decentralized pull-through using an integrated Logistics system (ILS) was established to improve health commodities availability. A study was conducted to assess if the new delivery system improved the supply and accountability of essential medicine in Tanzania and the findings showed that the system did not adequately address accountability and there was a combination of governance and system design challenges that still hinder the availability of health commodities at health facilities (Mikkelsen-Lopez et al., 2014).

The identified gap study shows that there is a lack of supply chain policy in Tanzania as currently does not use ILS, instead there is the use of Redesigned ILS which is more improved compared to the previous system also the study assessed ILS under

Manual quantification of order which no longer exists as quantification of order is currently conducted electronically through eLMIS. Added value to the current study includes the fact that it's going to assess supply chain performance and M&E practices under the current redesigned system but also essential medicine availability as the current policy applies.

2.4.4 Recommendation and strategies to strengthen M&E practices within the health commodities supply chain system

A well-functioning and perform of supply chain system depends much on the availability of medicine in public health facilities in Tanzania. Many challenges have been faced such as health commodities shortage which is often caused by unavailability at the Medical Store Department, the national supplier for public health facilities (Wiedenmayer et al., 2019). Studies conducted in Tanzania include the Jazia prime vendor system- a public-private partnership to improve medicine availability in Tanzania: from pilot to scale showed that Jazia prime vendor increased availability of tracer medicine from 69% to 94%. An identified gap of the study is it has assessed tracer medicine while the current government policy focuses on essential medicines. The current study will add value by assessing essential health commodities availability as a key performance indicator on the supply chain system but also prime vendor as a key indicator of medicine availability.

In most cases data generated from health facilities especially those concerned with the supply chain are of poor quality due to little ability to organize, extract, and present in a user-friendly manner which will be understandable for decision making, lack of tools has been a big deal in data management, absence of information system

reports, lack of monitoring and evaluation tool, etc all these contribute in low performance of health commodities supply chain in Tanzania (Kagaruki et al., 2013). The study conducted on factor affecting the utilization of evidence-based health information system for effective supply chain essential medicine in the Mbeya Region show that the supply chain of essential medicine at primary health care and central level in Tanzania is not evidence-based (does not use data) but also, the system is affected by budget allocation, lack of representative data for budgeting and forecasting process of National essential medicine and poor record keeping and quality of data.

Identified gaps in the study include the fact that there is policy change on the current supply chain system and health data management contrary to that assessed by the study; the study reviewed a manual information system while currently there is an electronic Health management information system powered by DHIS2, eLMIS, MSD Epicor 10 which has been linked to eLMIS but also the study is not linked with M & E practices on the availability of essential medicine.

There have been increasing reforms undertaking health financing to address the shortage of medicine, however, data are lacking on how medicine availability and stockout influence access to quality health services in Tanzania (Kuwawenaruwa et al., 2020). The study conducted in Dodoma Region assessing the effect of medicines availability and stock-out household's utilization of healthcare services showed that 70% availability of 18 traced items which was relatively good though there were some frequent stock outs which affected negatively service utilization by household members but also the study show that medicine availability has positive utilization of

health care services in Dodoma region.

Identified gaps of the study are as follows; the researcher assessed 18 tracer medicines while the current government policy is advocating an essential medicine list; the study assessed the availability of 18 tracer medicines but did not assess the supply chain management system as a core factor for medicine availability; lastly but not least 30% medicine shortage is still huge in life-saving in health sector, critical analysis for the observed shortage by the researcher was necessary, either the study will have added value to the current study as this research is going to assess heath commodities supply chain management system on the availability of essential medicines.

2.5 Research Gap

The findings attained from the Studies conducted in supply management system globally, Africa especially in Sub-Saharan Countries and Tanzania highlighted contributing factors to weak supply chain system and poor access to essential medicines; budget constraints; delay in delivery; lack of inventory tools; poor data quality; shortage of human resources and lack of Information use. However, most of the studies focused on essential medicines availability and affordability researchers who researched the supply chain system only assessed the old ILS system none of them assessed the current Redesigned system in the Tanzania context. Furthermore, none of the reviewed studies assessed how supply chain Monitoring and Evaluation best practices such as resource allocation for medicine audit and plan; data use and dissemination; and proper inventory management influenced the performance of the Supply Chain System, the current study therefore assessed the role of monitoring and

evaluation practices on performance of health commodities supply chain system case study of Dodoma City Council in Dodoma Region.

2.6 Conceptual Framework

The conceptual framework is developed based on theoretical and empirical reviews carried out in this study. This study focuses on monitoring and evaluation practices and performance of health commodities supply chain systems in public health facilities. Independent variables which are categorized on inputs are factors that influence the system and these are the existing M&E practices; challenges/ barriers of implementing M&E practices within the health commodities supply chain system; impact of inadequate M&E practices; recommendations and strategies to strengthen M&E practices.

Confounding variables are factors that are not manipulated as part of the study but they may exert influence on the dependent variable. The performance of the supply chain system acts as a Dependent variable (output) which represents the outcome of the M&E practices and their impact on the system performance. This study aims to show how each variable contributes to the performance of the health commodities supply chain system. Figure 2.1 shows the relationship between independent and dependent variables

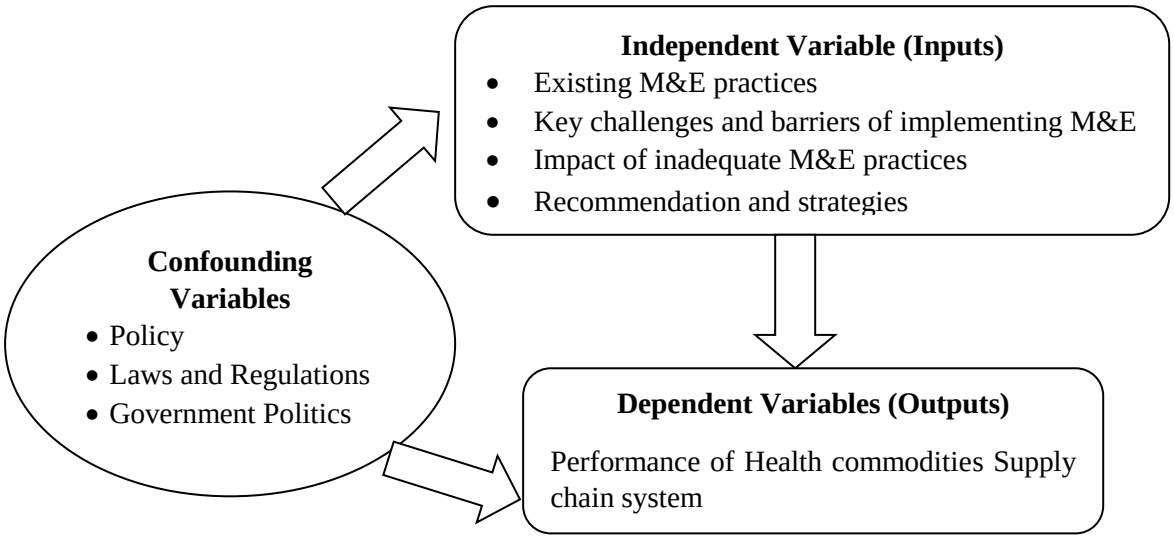

Figure 2.1: Conceptual Framework

Source: Researcher, (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 2004). This study has employed a cross-sectional research design. Cross-sectional research design is the type of descriptive research that provides information from a certain group, it suggests a relationship that merits further investigation. The study opts for a cross-sectional research design because it will help to show the relationship between monitoring and evaluation practices and the performance of the supply chain system. The research study has also used a mixed-method research approach.

3.2 Targeted Population/Study Area

The target population refers to a group of individuals the intervention who intend to conduct research in and draw conclusions from. This study targeted healthcare workers at public health facilities in Dodoma City Council in Dodoma Region, Tanzania. The researcher targeted this population due to high political influence with low performance in the health commodities supply chain system but also due to the time and resources allocated it can be used as a source of dependability and to acquire effective information on the study. The study has covered public health facilities in Dodoma city council to 79 respondents. This number includes the health management team (CHMT) and healthcare workers. A representative sample is selected from the sample confidentiality through the defined scientific methodology

of sampling.

3.3 Sample Size and Sampling Techniques

Sampling refers to the selection of some part of an aggregate or totality based on which a judgment or inference about the aggregate or totality is made (Kothari, 2004), in means obtaining information about the entire population by examining only part of it. In this research sample size selected requires respondents. This number is derived from the Taro Yamane formula using a confidence level of 95%, 5 s, and a margin of error (confidence interval) of 5%. The calculation formula is presented as;

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

Whereby:

n = Desired sample size

N = Population of the Study

e = precision of sampling error (0.05)

$$n = \frac{99}{1 + 99x0.05^2}$$

$= 79.35 \approx 79$ desired sample size

79 respondents are needed.

A Non-probability sampling technique was used in selecting the study respondents from the sample, using Quota sampling Techniques respondent were selected, this technique was used because it enables the researcher to select appropriate respondents which will provide key information and details about the study. Quota sampling is preferred because respondents will be broken down based on identified

characteristics related to the supply chain, experience in supply chain activities involvement, special knowledge of monitoring and evaluation, and also the researcher's judgment.

3.4 Data Collection Method

The data collection method was convergent whereby research questions for both Qualitative and Quantitative data were collected concurrently and findings were triangulated from combined data to answer research questions. This study has used primary data collected directly from health facilities and secondary data which was obtained from electronic systems and reports, primary tool for data collection in this study was a semi-structured questionnaire and interviews for primary data sources as they are relevant, efficient, and cost-effective. The structured questionnaire and interview questions consisted of both quantitative and qualitative questions which applied close-ended questions and open-ended questions which were coded in Kobo Toolbox.

3.4.1 Questionnaire

This study involved direct data collection from health care workers in health facilities and management teams for primary data and secondary data analyzed data electronic systems and facility reports and literature in Dodoma city council to collect data. Research questions were asked using a Questionnaire both Open-ended and closed-ended questions to respondents to obtain the necessary information to enhance the study. The researcher opted to use questionnaires as they offer efficient and inexpensive means of gathering large amounts of information from a sizeable sample volume.

3.4.2 Interview

The researcher also collected primary data from structured interviews within a sample size. The researcher asked questions by using direct interviews to gather necessary information which helped to answer the study questions. It focuses on the accuracy of different responses, due to which extremely organized data can be collected and collectively analyzed.

3.5 Data Processing, Analysis and Interpretation

3.5.1 Data processing

Data processing is the process of cleaning raw data in preparation for analysis. It involves identifying and resolving mistakes, filling in missing data, and organizing and transferring it into an easily understandable format. After administrating the questionnaire and conducting interviews with respondents obtained raw data will be systematically organized, edited, coded, and reviewed Type of data collected and processed includes several supply chain healthcare workers and management with knowledge and capacity to monitor and evaluate, participation, and involvement on supply chain monitoring and evaluation, and performance trend of the supply chain from eLMIS.

3.5.2 Data Analysis

Data analysis is the process of establishing meaningful information from raw data. The study used different data analyses including MS Excel 2019 (Pivot Table) for objective number two, three, and four and SPSS version 20 for objective number one using Factor analysis. Factor analysis is a multivariate statistical technique applied to a single set of variables when the investigator is interested in determining which

variables in the set form logical subsets that are relatively independent of one another (Tabachnick and Fidell, 2013). The focus of factor analysis is to reduce a huge number of inter-correlated measures to a few representative constructs or factors that can be used for subsequent analysis.

It was assumed that all variables correlate to each other to some degree. The variables were measured at the ordinal level. However, the significant factors were extracted to explain the maximum variability of the group under study. This will provide valuable input to the decision-makers to focus on a few factors rather than a larger number of parameters. The decision-makers are interested to know what M&E practices influence the health commodities supply chain. There may be boundless concerns on which the opinions of the respondents can be considered. The five M&E practices currently being implemented by different facilities were assessed: Availability of established clear goals and established; development of indicators; data collection and analysis; reporting and dissemination; and use of findings to make informed decisions.

The practices were explored by taking the responses from the survey. By using the factor analysis, five practices were clubbed into different components. Instead of concentrating on a multitude of practices, the policymakers can make a strategy to optimize the components rather than the individual practices

3.5.3 Data presentation

Data presentation the findings have been presented through visualization of tables, graphs, charts, and percentages to tell the story of the findings.

3.6 Ethical Consideration of the Study

In this study Researcher highly observed and followed all ethical issues including the privacy of the interviewee and informed consent with the experts was taken into consideration. Research clearance letters, letters from relevant authorities for permission to conduct this study including introduction letters from the Open University of Tanzania. The researcher has clearly explained the purpose of the study, the short-term and long-term advantages of participation in the study, and how it will influence policymakers. Also, has highly observed confidentiality, especially to respondents as they remained anonymous and were not mentioned in the report. All the above are adhered to during intellectual writing skills including the recognition of information to avoid plagiarism and proper language use.

CHAPTER FOUR

PRESENTATION ANALYSIS AND DISCUSSIONS OF RESEARCH FINDINGS

4.1 Chapter Overview

This chapter presents an analysis and discussion of research findings obtained from the study. According to the University of Pretoria, "the research aims to develop a model according to which relevance types in the information seeking and retrieval process may be mapped (Pretoria, 2003). The study was guided by the main objective which was to explore and analyze the role of monitoring and evaluation practices on the performance of health commodities supply chain systems in Public health facilities. The study used the Kobo toolbox to collect data and Microsoft Excel to analyze downloaded Excel sheets from Kobo. The study results are arranged by the specific objectives.

The first objective was to assess the existing Monitoring and Evaluation practices that are currently implemented within the health commodities supply chain system in Dodoma city council and this question will be answered by question number 11 in a questionnaire attached. The second objective was to identify key challenges and barriers in implementing monitoring and evaluation practices within the health commodities supply chain system in Dodoma city council which will be addressed in question number 23, 17, 2, and question number 3.

The third specific objective was to examine the impact of inadequate M&E practices on the performance of the supply chain system in Dodoma city council which will be

answered with question number 22, 18, 21, 14, and 15. Last but not least the fourth specific objective was to identify recommendations and strategies proposed by the study area to strengthen M&E practices within the health commodities supply chain system in Dodoma city council which will be answered by question number 24.

4.2 Description of the Sample

Participants in the survey were from twenty-eight (28) public health facilities located in Dodoma City Council. Respondents were selected from departments that deal with the management of health commodities including health facility management, laboratory personnel, and pharmacists total number of 78 respondents participated in the study as shown in Table 4.1; a Total number of Respondents participated in the study.

Table 4.1: Total number of Respondents who participated in the study

Category	Frequency	Percent
The Health Facility In charge	24	31%
Laboratory Personnel	7	9%
Pharmacist	19	24%
Others	28	36%
Total	**78**	**100%**

Source: Field Data, (2023)

4.3 General Information of the Respondents

Background data on the respondents included health facility name, respondent carder/professional, respondent position, gender, age, highest level of education, period of working in the facility, and current position. preliminary information about

the respondents in the study is essential for the interpretation of findings presented later in the report and can provide an approximate indication of the representativeness of the study (Mutalova & Newby, 2012). The description of each information is provided in the following subsections as follows; -

4.3.1 Distribution of Respondents by Gender

Respondents were asked to indicate their gender to determine whether gender had any impact on the performance of health commodities supply chain systems. supply chain management has historically been perceived as a male-dominated workforce, with men occupying the majority of management roles in the management of supply chain, nevertheless, women are increasingly becoming supply chain professionals and execute across the globe (Nigam & Delhi, 2020). Also, the findings show 49% of respondents were women and 48% were men. The findings of the study are presented in Table 4.2: Distribution of Respondents by Gender

Table 4.2: Distribution of Respondents by Gender

Value	Frequency	Percentage
Female	39	49.37
Male	38	48.1

Source: Field Data (2022)

4.3.2 Distribution of Respondents by Age Group

Respondents were further asked to indicate their age and the number of years they have been working in the current position or management of the supply chain, this aim was to establish the age of respondents in comparison with several years the respondent has been working in the position to determine if experience in the

management of health commodities has an impact on the performance of supply chain. The age and number of years the respondent has worked were important because the higher the age indicates that the personnel have more experience as indicated in table 4.3 below: -

Table 4.3: Distribution of Respondents by Age

Value	Frequency	Percentage
31-40	39	49.37
21-30	27	34.18
41-50	11	13.92

Source: Field Data (2023)

From Table 4.3, 49.37% of respondents were between 31-40 years the majority, of those between 21-30 years were 34.18% and those with age 41-50 were 13.92%. these findings show that young people dominated the positions who are expected to have more knowledge and mild experience in the management of supply chain activities but also take part in the linkage of supply chain management and monitoring and evaluation practices at the facilities for high performance.

Table 4.4: Period of Respondents worked at the Facility

Value	Frequency	Percentage
3 Years and above	48	60.76
1 Year to 3 Years	27	34.18
Below one Year	2	2.53

Source: Field Data (2023)

The above table shows that the majority of the respondents worked at the facility for three years and above 60% 34% worked at the facility between one to three years and the remaining 2% were below one year this indicates the majority of respondents worked at the facility for a long period and that gives them more information and experience. The sound foundation for managing health commodities requires effective management experience to save money and improve performance rational drug use, information, and systematic assessment and monitoring are essential (Annan et al., 2014)

Table 4.5: Distribution of Respondents by Education Level

Value	Frequency	Percentage
Diploma	49	62.03
Certificate	21	26.58
Bachelor's Degree	7	8.86

Source: Field Data (2023)

The above table shows the distribution of respondents by education level and the findings show that the majority of the respondents 62.03% had a Diploma, 26.58% had a certificate and only 8.86 had a bachelor's degree. the concept of education and health are developed and linked, and we review a wide range of empirical studies to clarify pathways of linkage and explore the implications, basic education expertise enhances skills, fundamental knowledge, reasonability, emotional self-regulation, and interactional abilities which are critical components in health commodities management (Hahn & Truman, 2015). The findings show that the majority of personnel at the primary health facilities had a diploma level of education and these

are the respondents who are expected to take part in the performance of the supply chain by conducting M&E activities in their areas, while the highest level of education which are expected to have more knowledge is with the lowest percentage of 8.86%.

4.4 To assess the existing Monitoring and Evaluation Practices implemented within the health commodities supply chain system Health

The first objective aimed at identifying the current M&E practices that are implemented at the studied facilities and those include; - establishing clear goals and objectives; developing indicators; collecting data; analyzing data; reporting and dissemination and using findings to make informed decision making. The majority of respondents were practicing data collection, reporting, and dissemination and using the findings to make informed decisions. (Beldek et al., 2020) argues evaluation of pharmaceutical or hospital supply chain management should be considered as a supply chain focus area as it might increase and improve the efficiency and reduce the cost of the health care supply chain.

This section presents the main part of the study which assesses the M&E practices implemented within the health commodities supply chain system. The practices were measured using the dichotomous questions (measured as Yes (1) or No (0)). The factor analysis approach was employed to determine the practices that are considered to influence the health commodities supply chain system. Five predetermined practices were considered and assessed. The use of the factor analysis helped to establish the categories or groupings of the practices and thus helped to conclude. Therefore, to assess the practices, it is considered necessary to detail the concept and

its key steps to apply factor analysis as presented subsequently.

4.4.1.1 Assessment of the suitability of the data

The suitability of data for factor analysis was measured using the Kaiser-Meyer-Olkin (KMO) Measure of sampling adequacy and Bartlett's test of Sphericity. The two statistical measures assess the factorability of the data. The KMO measures the sampling adequacy for each variable in the model and the complete model. The value of KMO varies from 0 to 1. The value between 0.8 and 1.0 indicates the sampling is adequate. KMO values between 0.7 and 0.79 are middling and values between 0.6 and 0.69 are mediocre. Values less than 0.6 indicate the sampling is not adequate and remedial action should be taken. From the data extracted, the KMO has resulted in a value of 0.60 which is above the minimum threshold of 0.600, and thus the sample was considered adequate for further statistical analysis (Table 4.6).

Bartlett's Test of Sphericity tests the null hypothesis that the original correlation matrix is an identity matrix indicating that the variables are unrelated and therefore unsuitable for structure detection. The alternative hypothesis is that they are correlated enough to where the correlation matrix diverges significantly from the identity matrix. The significant value <0.05 indicates that a factor analysis may be worthwhile for the data set. For our case, Bartlett's test of Sphericity was obtained to be significant (0.012) as it is less than 0.05 (Table 4.6).

Therefore, from the two tests, factor analysis was found to be appropriate for further **statistical** analysis.

Table 4.6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.60
Bartlett's Test of Sphericity	Approx. Chi-Square	22.710
	Degree of Freedom (df)	10
	Significant	.012

Source: Researcher, 2023 (IBM SPSS Statistics Ver.20)

Table 4.7 below presents the correlation matrix of the practices considered in the health commodities supply chain system for the facilities investigated in Dodoma. The correlation portrays that they are sufficient correlations to justify the application of factor analysis. It has been established that they are two items (variables) whose inter-correlation > 0.3000 and it can be concluded that the hypothesized factor model appears to be suitable. The determinant score of the correlation matrix is 0.734 >0.00001 which indicates the absence of multicollinearity.

Table 4.7: Correlation Matrix

		a	**b**	**c**	**d**	**e**
Correlation	**a**	1.000	.212	.043	-.194	-.104
	b	.212	1.000	.150	-.173	-.152
	c	.043	.150	1.000	.000	.075
	d	-.194	-.173	.000	1.000	.388
	e	-.104	-.152	.075	.388	1.000
a. Determinant = .734						
Key:						
a: Availability of established clear goals and objectives						
b: Developed Indicators						
c: Data collection and analysis						
d: Reporting and Dissemination						
e: Use Findings to make an informed decision						

Source: Researcher, 2023(IBM SPSS Statistics Ver.20)

4.4.1.2 Factors Extraction

The Kaiser's criterion and scree test were used to determine the number of initial unrotated factors extracted. Table 4.8 below presents the eigenvalues and total variance explained by the use of the Principal Component Analysis extraction method.

The interest was on all the components with the eigenvalue of 1 or more. To determine the number of components that meet the Kaiser criterion, the total variance explained in Table 4.8 below was extracted. From the table, scanning through the total column, it can be established that the first two components have an eigenvalue greater than 1. Component 1 explains about 33% and Component 2 explains about 23%. The cumulative percentage explained by those two components happened to be about 55%. This implies that the two components explain the majority of the variance within the data set.

Table 4.8: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.628	32.558	32.558	1.628	32.558	32.558	1.489	29.771	29.771
2	1.142	22.843	55.401	1.142	22.843	55.401	1.281	25.629	55.401
3	.880	17.606	73.007						
4	.757	15.149	88.156						
5	.592	11.844	100.000						
Extraction Method: Principal Component Analysis.									

Source: Researcher, 2022(IBM SPSS Statistics Ver.20)

Figure 4.1 below of the scree plot presents the graph plotted for the eigenvalues on the y-axis against the thirteen items in their order of extraction on the x-axis. The initial factors extracted are large factors with higher eigenvalues followed by smaller factors. The scree plot served to determine the number of factors to retain. The plot shows that there are two practices for which the eigenvalue is greater than one and accounts for most of the total variability in data. The other practices account for a very small proportion of the variability and are considered less important.

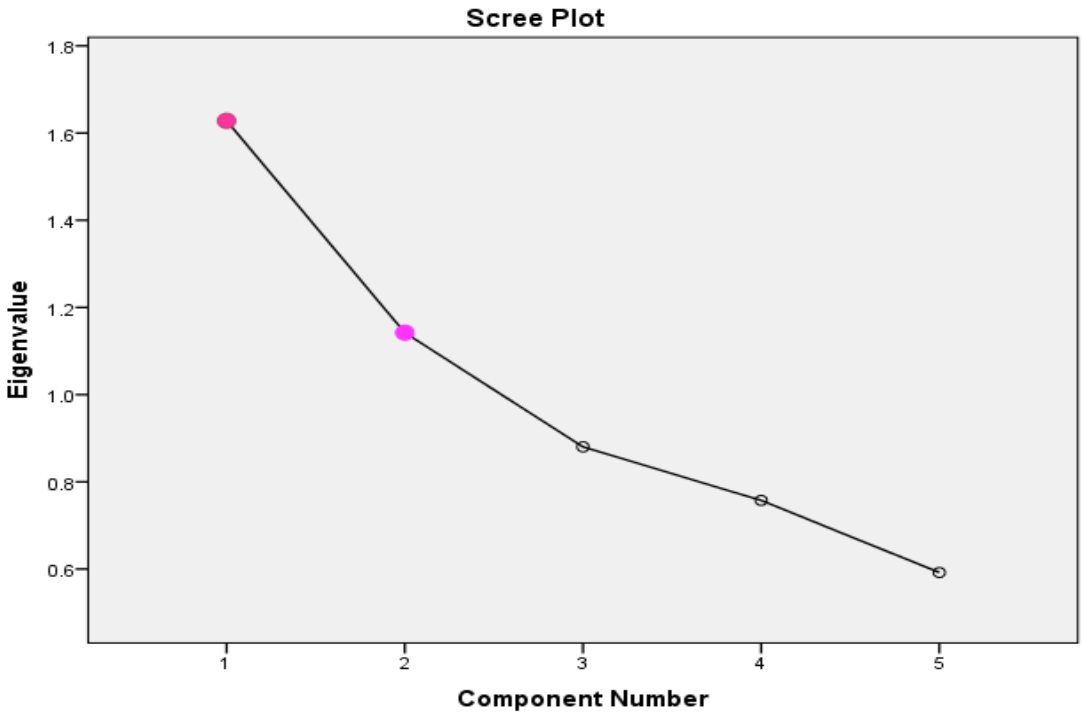

Figure 4.1: Scree plot

4.4.1.3 Descriptive Statistics for M&E Practices

The mean of responses presented in Table 4.8 below were measured by the use of dichotomous variables, three practices happened to have a mean of over 0.5 which indicates that respondents agree with those M&E practices. However, some

exceptions were noted in some cases including the practices related to the availability of established clear goals and objectives and developed indicators. The remaining three practices were considered to have influenced the decision of the M&E practices in the health commodities supply chain system.

The three practices agreed upon by the participants were: data collection and analysis; reporting and dissemination; and the use of findings to make informed decisions

Table 4.9: Descriptive Statistic

Descriptive Statistics			
	Mean	Std. Deviation	Analysis N
Availability of established clear goals and objectives	.06	.248	77
Developed Indicators	.13	.338	77
Data collection and analysis	.73	.448	77
Reporting and Dissemination	.86	.352	77
Use Findings to make an informed decision	.77	.426	77

Source: Researcher, 2023(IBM SPSS Statistics Ver.20)

4.5 Challenges and Barriers to Implementing M&E Activities within Health Commodities Supply Chain

4.5.1 Lack of Monitoring and Evaluation (M& E) Training

Training and continuous capacity building are needed for effective M&E processes, moreover, organizational performance management and supply chain systems as functions on their own, are very complex and require an adequate skillset and

knowledge to be effectively executed (Oppelt, 2019). The study points out that 74.68% of respondents did not have any training on Monitoring and evaluation and only 25.32% indicated that they have training on monitoring and evaluation. The findings indicate that a lot of health care workers especially those working on the management of the health commodities supply chain do not have M&E skills which can potentially contribute to the performance of the health commodities supply chain through conducting monitoring and evaluation activities availability of M&E practices in the management of health commodities supply chain system facilitates policy development and proper financial management as well as it influences the alignment of primary health facilities interventions with national government priorities. The figure below shows

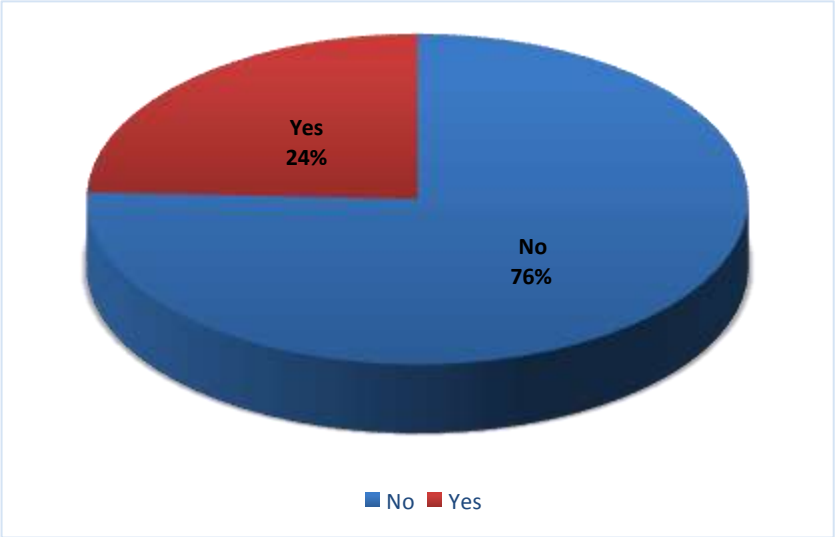

Figure 4.2: Respondents with M&E training

4.5.2 Shortage of Health Commodities Professional Human Resources

Several positions have not been filled due to the inability of the public health system to attract and retain staff, especially in rural areas, salaries and benefits in the private

sector and urban areas are significantly higher this situation is further exacerbated by high absenteeism in public primary health facilities (Printz et al., 2013b) The study also indicated there was high shortage of professional health commodities supply chain managers at the primary health facilities. 36% of the respondents were working on the management of health commodities at the facilities while they were not professional pharmacists or Laboratory managers. Only 9% of respondents were Laboratory managers and 24% of the respondents were pharmacists. This shows that they may not have experience and knowledge on M&E but also on Supply chain management and this may result in low performance of the health commodities supply chain system. Building an effective supply chain involves engaging the right people in the right quantities with the right skills at the right time to implement the procedures and process that ensure an effective supply of health commodities (Printz et al., 2013b) figure below highlight the shortage of professional health commodities managers at the health facilities.

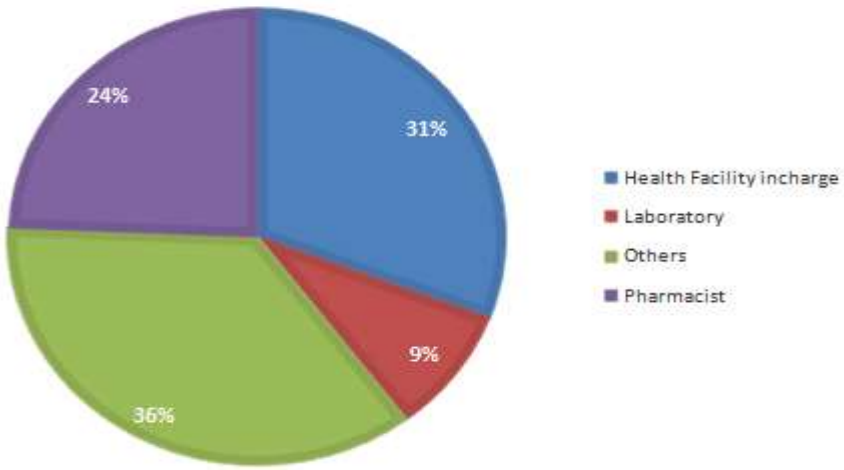

Figure 4.3: Shortage of professional health commodities managers at health facilities

4.6 Effect of inadequate M&E practices

Respondents were asked a few questions which examined the impact of inadequate M&E practices on the performance of supply chain systems at their facilities. (Oppelt, 2019) argue that public entities, especially municipalities, are remaining in the implementation phase of supply chain management focusing on legislative compliance only not fully exploring the performance phase. Inadequate monitoring and evaluation practices are identified as a key challenge in local government. Management of health commodities in the health sector is guided by policies and guidelines, so participants were asked to identify minimum and maximum stock levels that guide the facilities to store commodities based on their monthly consumptions. Staff should be empowered in monitoring and evaluation practices to make informed decisions or participate in decision and policy-making processes, that impact health supplies and the supply chains (Printz et al., 2013a).

According to the supply chain key performance indicator manual facilities are required to stock commodities with a minimum of two months and a maximum of four months. The findings showed that 66% of respondent were aware of the minimum and maximum stock level were the remaining 34% provided the wrong answer this indicates that the majority of the respondents were aware of the requirement whereby if sensitization of M&E practices prevail it may improve performance in health commodities supply chain system. The figure below shows the percentage distribution of the responses.

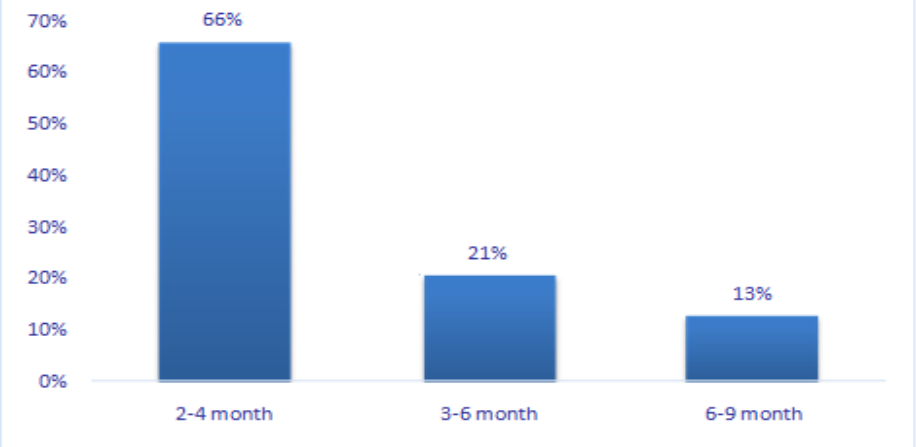

Figure 4.4: Respondent Responses on Min-Max

Also, respondents were asked if the lack of M&E practices affects the availability of health commodities, and 97% of the respondents answered yes that the lack of M&E activities at the facilities may affect the availability of health commodities and diminish the performance of supply chain system this is also shown in figure 4.4

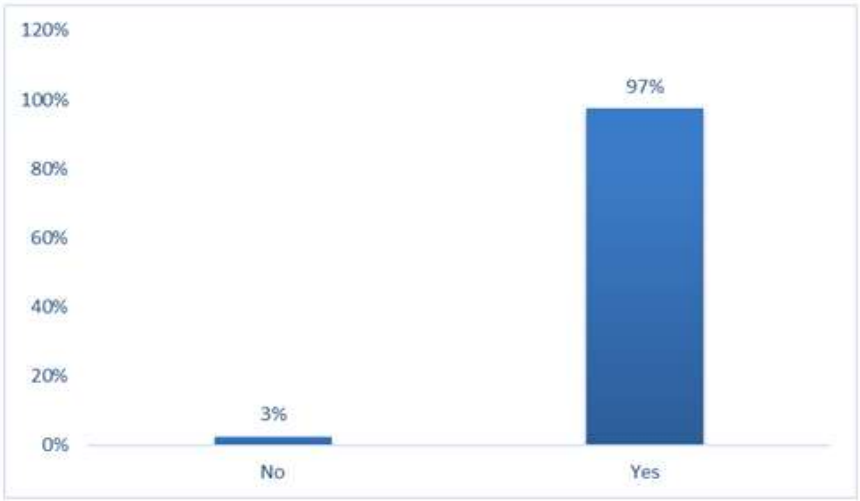

Figure 4.5: Respondents Response on the Impact of Inadequate M&E Practices

Also, respondents were asked about the possible impact of not conducting M&E practices on the management of commodities and the responses included highly overstocked commodities, increase in wastage, and the possibility of expiries one respondent was caught saying.

> *"…not conducting Monitoring and evaluation practices at public health facilities, especially on health commodities, medical supplies and medical equipment's contribute to stock out of necessary equipment and medicine which create a need for outsourcing from other facilities……"*

Secondary data analysis was conducted through eLMIS to link the mentioned impacts from the field and that of the system between January 2023 to August 2023 for the ILS redesigned program.

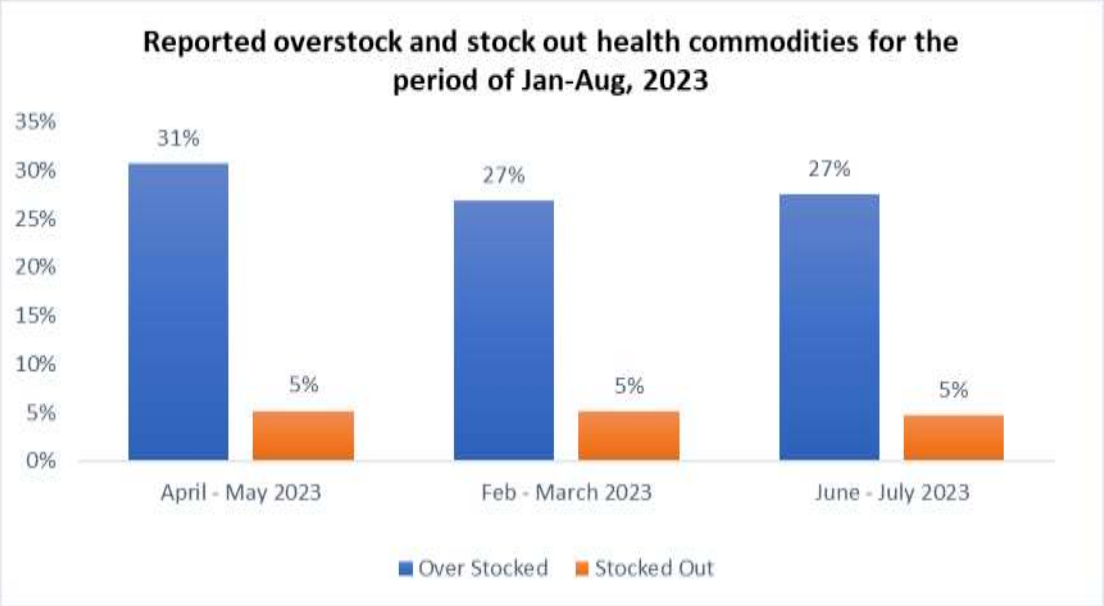

Figure 4.6: Reported Overstock and stockout

Source: Secondary Data MIS (2023)

4.7 Recommendations and Strategies to Strengthen M&E Practices

Another objective was to identify respondent's recommendations and strategies to strengthen M&E practices at their facilities. To achieve this objective all respondents were asked to mention their recommendations on how to improve M&E practices and the recommendations were based on the level of the facility, management level, and central government. It's very important to note that public accountability does not only include public expenditure but also reporting on the progress, performance,

failures, success, and the actual versus targeted performance(Printz et al., 2013a) Majority of the response 52% suggested provision of on job training to health care workers on how to conduct monitoring and evaluation at their facilities, while 39% recommended government to allocate more pharmaceutical personnel at health facilities and only 9% recommended financial allocation to conduct M&E activities.

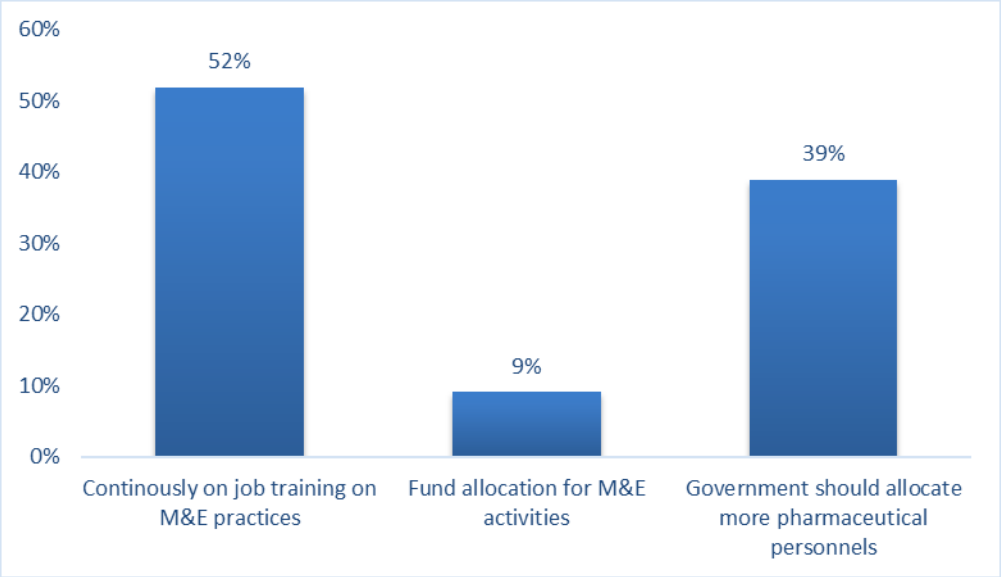

Figure 4.7: Respondents Recommendations

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Overview

This chapter summarizes the major findings, conclusions, and recommendations of the study based on the data collected and analyzed. It also includes areas for further study. The reader is reminded of the general and specific research objectives of the study by drawing from the research questions. The reader is provided with a summarized account of what can be said about the subject matter. The study was done to determine the role of monitoring and evaluation practices on the performance of the health commodities supply chain system in Tanzania a case study of public health facilities in the Dodoma region. This chapter is divided into three sections; the conclusion of each research objective, the recommendation, and the last areas for further research that this study did not explore.

5.2 Conclusion of the Research Study

The general objective of the study was to explore and analyze the role of monitoring and evaluation practices on the performance of the health commodities supply chain system in Public health facilities in Tanzania. To attain this objective the researcher formulated four specific objectives, the first one intended mainly to assess the existing Monitoring and Evaluation practices implemented within the health commodities supply chain system, this was important to focus on the current M&E practices that are implemented at the health facilities. This will help to identify any gaps in the system and make recommendations for improvement. The majority of the

respondents were not aware of the M&E practices and the few who were aware did not take into consideration all the practices such as establishing clear goals and objectives

The second objective was intended to gather information on the key challenges and barriers in implementing monitoring and evaluation (M&E) practices within the health commodities supply chain system. The challenges and barriers include either lack of funding, lack of technical expertise, etc, these challenges and barriers can make it difficult to implement effective M&E systems, which can in turn lead to inefficiencies and waste in the health commodities supply chain. The major finding in this objective showed that the biggest challenges for implementing M&E activities included a lack of financial resources, a Lack of skills and knowledge among health commodities managers, and a shortage of human resources.

The third objective aims to examine the impact of inadequate M&E practices on the performance of a supply chain system inadequate M&E practices can have a significant impact on the performance of a supply chain system. The results showed without proper monitoring and evaluation, it can be difficult to identify and address potential problems which can lead to delays, disruptions, and even failures in the supply chain. Additionally, inadequate M&E can make it difficult to track progress and make necessary adjustments to improve performance. As a result, organizations that do not have adequate M&E practices in place are at a significant disadvantage. The fourth objective is to identify recommendations and strategies to strengthen M&E practices within the health commodities supply chain system. This includes identifying the strengths and weaknesses of the current system, as well as developing

recommendations for how to improve it.

5.3 Recommendation of the study

In public health services, the performance is normally connected to the output (the goods and services produced) relative to the outcomes (the effect of output on the community). The success of the performance of the health commodities supply chain is connected to M&E practices within health facilities. To ensure the proper performance of the health commodities supply chain system through monitoring and evaluation practices the study recommends the following;

i) Training staff on M&E methods and tools M&E being a new field, training is very crucial, especially to health commodities managers in building M&E human capacity which will enable them to manage the performance of health commodities supply chain system in health facilities. Therefore, more M&E formal and refresher training should be arranged in the public health sector to build capacity for monitoring and evaluation.

ii) Developing a more comprehensive M&E plan that covers all aspects of the health commodities supply chain .M&E is essential for improving public health performance. The government should allocate adequate funds to ensure effective use and identify gaps in service delivery, coverage, and effectiveness. This information can be used to target resources and interventions to the areas where they are most needed but also Create a culture of M&E within the health system

iii) Stakeholders should be more involved in project planning, design, implementation, monitoring, and evaluation. The project implementers

should ensure that stakeholders meet at the identified time to discuss the progress of the project. No actor is supposed to be left behind

iv) There is also a need for management to prioritize team-building events because teamwork and team commitment were observed as the areas that need to be worked on. Therefore, a call for team building is important within organizations to harmonize this.

5.4 Recommendation for Further Studies

The researcher is aware that this study was not exhaustive enough to bring perspective to all elements related to the Health commodities supply chain system and M&E practices and how the two can influence the performance of the supply chain in public health facilities, therefore this study findings should only provoke more inquiries by other researchers and below are some of the areas suggested by the researcher;

i) Similar studies should be carried out in other areas of the country and also in other sectors like education and environment

ii) More research should be done on other factors influencing the performance of the health commodities supply chain system but also more research on monitoring and evaluation of health commodities management.

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APPENDICES

Appendix 1: Data Collection Questionnaire

Introduction

Hello!

My name is Winifred Emmanuel a student at The Open University of Tanzania pursuing a master's degree in Monitoring and Evaluation. I am currently conducting a study on**, the role of Monitoring and Evaluation practices on the performance of public health commodities supply chain systems in Dodoma, Tanzania**, as part of The Open University of Tanzania requirements to attain a master's degree in Monitoring and evaluation.

Your responses are very significant in the achievement of this study. The information provided will be only used for academic purposes and will be treated with the highest confidentiality.

I would appreciate it if you agreed to participate in this research because your responses and views are very important.

May I proceed with the questionnaire? 1. Yes 2. No.

Please answer all questions

GENERAL INFORMATION

1. Health Facility Name ……
2. Respondent's Carder/Professional …….
3. Respondent position …….
4. Gender
    - Male
    - Female

5. Age
    - 21 - 30
    - 31 - 40
    - 41 - 50
    - 51 and above
6. Highest Level of Education
    - Master's Degree
    - Bachelor Degree
    - Diploma
    - Certificate
    - Others; Please specify
7. How long have you worked in this health facility?
    - Below One Year
    - 1 Year to 3 Years
    - 3 Years and above
8. How long have you worked in your current position?
    - 1 to 6 months
    - 6 months to 1 year
    - 1 year and above
9. Do you have any training on Monitoring and Evaluation?
    - Yes
    - No

10. What was the form of the training
    - Professional M&E Training
    - On Job Training
    - From working experience
    - IMPACT Approach Initiative
11. What are the current Monitoring and evaluation (M&E) practices implemented within the health commodities supply chain system

    kama facility ina viashiria vyovyote vya kupima utendaji kazi wa bidhaa za afya; kama kituo kinachakata taarifa mbalimbali za bidhaa za afyamf katika mazoezi ya DQA maralia TB HIV RCH
    - Availability of established clear goals and objectives
    - Developed Indicators
    - Data collection and analysis
    - Reporting and Dissemination
    - Use Findings to make an informed decision
12. Does the facility conduct health commodities Monitoring and Evaluation activities?

    Physical Inventory (HMK), Stock Taking, FEFO, Storage Condition, Timely submission of R&R, Timely updating
    - Yes
    - No
13. How frequently does the facility conduct health commodities inventory activities?
    - Monthly
    - Bi-Monthly

- Quarterly
- Bi-annual
- Annual

14. Are you aware of min- max stock level?
    - 3-6 month
    - 2-4 month
    - 6-9 month
15. Are you aware of the public health commodities supply chain indicators reference manual?
    - Yes
    - No
16. What are the Key performance indicators that are used to assess the eff ectiveness and efficiency of the health commodities supply chain?
    - Level One KPIs
    - Level two KPIs
17. Does the facility have financial resources allocated to conduct M&E activities?

    Mf. mkinunua dawa kwa mshitiri, kufata emergency orders, je huwa unashiriki katika stage yoyote wakati wa kufanya mipango

    - Yes
    - No
    - I don’t know

18. Do M&E practices affect the availability of health commodities supply chain systems?
    - Yes
    - No
19. Does the Council management team, return the approved budget for facility implementation?
    - Yes
    - No
20. Explain, How M&E practices affect the availability of health commodities. ……
21. How do M&E practices influence the decision-making process in the management of the health commodities supply chain system? …….
22. How do inadequate M&E practices Impact the performance of the health commodities supply chain system, including issues such as Stock outs, delays, mismanagement, and resource wastage?.....
23. What are the key challenges and barriers in implementing M&E practices within the health commodities supply chain system……
24. What is your recommendation and strategies to strengthen M&E practices within the health commodities supply chain system?.....

THANK YOU FOR YOUR PARTICIPATION

Appendix 2: Research Clearance Form

OUT/DPGS/S2

THE OPEN UNIVERSITY OF

TANZANIADIRECTORATE OFPOSTGRADUATE

STUDIES

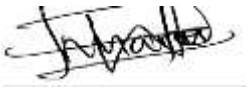
REQUISITION FORM FOR RESEARCH

CLEARANCE LETTER

Date: 05/06/2023

1. **Name of Student WINIFRIDA EDWIN EMMANUEL**
2. **Gender: FEMALE**
3. **Registration No. PG202086100 Year of Entry: 2020/2021**
4. **Faculty: FACULTY OF ART AND SOCIAL SCIENCE**
5. **Programme: MASTERS OF ARTS IN MONITORING AND EVALUATION**
6. **Research Title:** ***THE ROLE OF MONITORING AND EVALUATION PRACTICES ON PERFORMANCE OF PUBLIC HEALTH COMMODITIES SUPPLY CHAIN SYSTEM IN DODOMAREGION, TANZANIA***
1. **Tentative dates for data collection: From 12/06/2023 to 30/06/2023**
8. **Student Email: ewinyfrida@gmail.com**
9. **Student Phone Number +255 653 375 118**
10. **Research Locations / Site: DODOMA**

SIN	Region	District Council Municipality	Name of Organization	Contact Person and Postal Address	Place
1	DODOMA	DODOMA CC	PORALG	DIRECTOR HEALTH SERVICES, SOCIAL WELFARE AND NUTRITION P.0.BOX 1923	DODOMA
2					

11. **Date of submission:** **05/06/2023** **Signature:** 

12. **Comments by Supervisor**

The candidate can proceed with data collection

Name of Supervisor **Dr.Noel Matemba** **Signature** 

Date:05/06/2023

Appendix 3: Clearance Letter

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT/ PG202086100

8th June, 2023

Permanent Secretary,

President's Office Regional Administration and Local Government,

P.O.Box 1923,

DODOMA.

Dear Permanent Secretary,

RE: RESEARCH CLEARANCE FOR MS. WINIFRIDA EDWIN EMMANUEL, REG NO:PG202086100

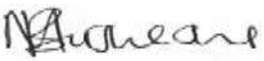
2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1 January 2007. In line with the Charter, the Open University of Tanzania's mission is to generate and apply knowledge through research.

3. To facilitate and simplify the research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Ms. Winifrida Edwin Emmanuel, Reg. No: PG202086100)** pursuing a **Master of Arts in Monitoring and Evaluation (MAME).** We hereby grant this clearance to conduct research titled **"The Role of Monitoring and Evaluation Practices on Performance of Public Health Commodities Supply Chain System in Dodoma Region, Tanzania".** She will collect her data at your Office from 9th June to 9th July 2023.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice-Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820.Lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

THE OPEN UNIVERSITY OF TANZANIA



Prof. Magreth S.Bushesha

For: VICE CHANCELLOR

Kinondoni Biafra, Kawawa Road; P.O 23409; Dar es Salaam; Tel:
+255 22 2668 445;E-Mail:vc@out.ac.tz||
Website:www.out.ac.tz

JAMHURI YA MUUNGANO WA TANZANIA

OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

Mkoa wa Dodoma
Anwani ya Simu REGCOM Simu
+255262324343/2324384
Nukushi 0262320046
Barua pepe ras@dodoma.go.tz
Tovuti: www.dodoma. go.tz

Ofisi ya Mkuu wa Mkoa
Jengo la Mkapa,
2 Barabara ya Hospitali,
S.L.P 914,
41185 DODOMA.

Unapojibu tafadhali taja:

Kumb. Na. HA.107/249/01 5/7

19 Juni, 2023

Mkurugenziwa Jiji,
S.L.P. 1249,
DODOMA.

YAH: UTAMBULISHO WA KUFANYA UTAFITI

Tafadhali rejea mada tajwa hapo juu.

2. Ofisi ya Katibu Tawala Mkoa imepokea barua yenye Kumb. Na. AB.307/223/01 ya 13 Juni 2023 kutoka Ofisi ya Rais TAMISEMI kwamba inatoa ruhusa ya kibali cha utafiti kwa mwanafunzi **Winifrida Edwin Emmanuel** wa Shahada ya Uzamili (Masters in Monitoring and Evaluation) kufanya utafiti juu ya "***The role of Monitoring and Evaluation Practices on Performance of Public Health Commodities Supply Chain System in Dodoma Region, Tanzania***" kwenye vituo vya kutolea huduma za Afya vya Halmashauri ya Jiji la Dodoma katika Mkoa wa Dodoma.

3. Kwa maelezo haya, namtambulisha kwako ndugu ***Winifrida Edwin Emmanuel*** ili apate ushirikiano wa kufanya utafiti huu kwa maslahi mapana ya upatikanaji wa bidhaa za Afya kuanzia mwezi **Juni hadi Julai, 2023.**

4. Ninakushukuru kwa ushirikiano.

Dkt. Nelson Bukuru
Kny, **KATIBU TAWALA MKOA**
DODOMA