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EAC Regional Centre of Excellence for Vaccines, Immunization and Health Supply Chain Management (EAC RCE-VIHSCM)

ANALYSIS OF THE EFFECTIVENESS OF THE STRATEGIC OUTSOURCING SYSTEM OF JAZIA PRIME VENDOR IN COMPLEMENTING MEDICAL STORES DEPARTMENT IN SINGIDA REGION, TANZANIA

By

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Supervisor: **Prof. Shiferaw Mitiku**

August 2023

DECLARATION

I, **Daniel Geoffrey Pyuza**, hereby declare that the dissertation titled ***"Analysis of The Effectiveness of The Strategic Outsourcing System of Jazia Prime Vendor in Complementing Medical Stores Department in Singida Region, Tanzania"*** has been written by me without any external unauthorised help, that it has been neither presented to any institution for evaluation, for any Diploma or fellowship nor previously published in its entirety or in parts. Any parts, words or ideas, of the thesis, however limited, which are quoted from or based on other sources, have been acknowledged as such without exception."

Name and signature of student: ***Daniel Geoffrey Pyuza***

Signature ……  ……

Date…**15th August 2023**

SUPERVISORS' APPROVAL

We certify that Daniel Geoffrey Pyuza has conducted his Dissertation entitled ***"Analysis of The Effectiveness of The Strategic Outsourcing System of Jazia Prime Vendor In Complementing Medical Stores Department In Singida Region, Tanzania"*** has been submitted for evaluation and examination with our approval as University Supervisors.

Name and signature of supervisor

Ass.Prof. Shiferaw Mitiku

Signature ……  ……

Date **……24th August 2023**……

DEDICATION

This work is primarily dedicated to my lovely parents Mr and Mrs Geoffrey Pyuza, for their support and encouragement during the study period.

Special dedication to my wife Hilda Chipalo, my children Geoffrey, Adrian, and Adriela for their tolerance while I was busy with this study.

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ABBREVIATIONS AND ACRONYMS

eLMIS	electronic Logistics Management Information System
DC	District Council
iCHF	Improved Community Health Fund
IRB	Institute Research Board
MC	Municipal Council
MSD	Medical Store Department
PI	Principal Investigator
PPP	Public- Private Partnership
PVS	Prime Vendor System
WHO	World Health Organization

ABSTRACT

Background.

Governments in developing countries are gradually implementing new ways and systems to streamline and improve community supply chain management because it is so important to their economies. Globally, governments are investing heavily in streamlining and improving public supply chain management, including online tender management. In Tanzania, the availability and accessibility of the health commodities is one of the main indicators to measure the performance of the health system. In most of the health facilities, the availability of the medicine has never turned to 100% despite several measures taken to strengthen the system. The Ministry of Health has tried to establish several interventions to increase medicine availability, but they have all failed to satisfy the needs of customers.

Methods

The study used descriptive cross-sectional study design. Descriptive and inferential statistics such as frequency, mean and regression analysis were used to analyse the data with the help of SPSS version 25. Descriptive statistics were used for all objectives. Inferential statistics, including the Paired sample T-Test, were used to determine the mean difference in commodity availability in public health facilities before and after PVS. The percentage of each health facility's availability of health commodities was analyzed and compared between the average before and after Prime vendor. In terms of order lead time, it was calculated by subtracting the time it took to order health commodities from the Prime Vendor and the days it took to receive health commodities at the health facilities. However, the difference between ordered and received commodities was used to calculate the order fulfillment rate by Prime Vendor to health facilities. The percentage of on-time payment by health facilities was calculated by counting the number of days a consignment was received and the day payment was made to the prime vendor.

Results

The mean was higher after PVS (M=59.17, SD=6.12) than before PVS (M=54.39, SD=5.36). The difference in means (difference=4.779) was statistically significant (t (138) =-9.488, $p<0.001$). A total of 109 (20.3%) orders were fulfilled as per the facility request while a total of 312 (58%) were delivered against the facility request. 164 (29.7%) orders were paid within

the contractual period while 217 (39.3%) were paid beyond the contractual period. However, 171 (31%) of orders were not documented. A total 320 (58%) of orders were delivered within the contractual period while 114 (20.7%) orders were delivered beyond the contractual period. However, 118 (21.3%) of orders were not documented.

Conclusion

Jazia Prime Vendor System has insignificant impact on ensuring health commodities availability to the public health facilities. This has been revealed through a little increase of percentage availability of health commodities after implementation of Jazia Prime vendor system, significant lower order fulfilment rate from PV to health facilities, Significant low delivery rate to the health facilities but also delay in paying the prime vendor. However, the health care providers are not satisfied by the performance of Jazia PVS.

Keywords: Jazia Prime Vendor System, Availability of the health commodities, Singida region

Contents

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Governments in developing countries are gradually adopting new ways and systems to modernize and improve public supply chain management because it is so important to their economies. (1) Globally, governments are investing heavily in streamlining and improving public supply chain management, including online tender management. This aims to improve access to bids, efficiency and cost savings (faster and cheaper) in government supply chain management, and transparency (to prevent corruption). (2)

In Tanzania, the availability and accessibility of the health commodities is one of the main indicators to measure the performance of the health system. In most of the health facilities the availability of the medicine has never turned to 100% despite several measures taken to strengthen the system. The Ministry of Health has tried to establish several interventions to increase medicine availability but they have all failed to satisfy the needs of customers.(3)

The country through ministry of health has prepared several guidelines such as Quantification guideline of 2018, Roles and Responsibilities guideline (RORE) of 2020 in order to guarantee that the supply of health commodities in the country is assured but the availability is still low. The country has confronted the challenge of safeguarding those adequate essential medicines and supplies are available at all public health facilities. The intervention for this problem has resulted into several solutions such as behavior change, supply chain system introduction, performance incentives and technical assistance through on Job Training and fortification of supportive supervision. (4)

There are numerous factors that influence availability of health supplies in public health facilities, including but not limited to financial considerations, infrastructure issues, political considerations, procurement laws, the quality of products, vendors, and the distance between the vendors and the public health facilities. The government, on the other hand, has put forward a National Health Policy in 2007, which has not been successful in solving the problem.(5)

Over 70% of the country's healthcare needs are met by imports, with local production accounting for less than 30%. Keko Industries, a subsidiary of Tanzania's Medical Stores Department, is responsible for producing more than seventeen generic products. The lack of surgical and examination gloves in hospitals following the corona epidemic was addressed by MSD in January 2022 by opening a new plant in Idofi Makambako.(5)

The medical stores department remains the prime supplier of health commodities to all health facilities from the primary to national level facility. The facility sends an order to the MSD in every two months (bimonthly order) and the MSD delivers the consignment before the end of the ordering month. In total there are eight zones over the country which are Tabora, Dar es salaam, Iringa, Mbeya, Dodoma, Mwanza, Mtwara and Moshi zones. Apart from the eight zones there are two salespoints namely Muleba which serves Kagera region and three councils of Geita region and Tanga sales point which serve Tanga region and part of Manyara region. The major functions of MSD are Procurement, Storage, Distribution and Production of the health commodities.(4)

It was found that, the supply performance by MSD until 2015 to the health facilities was about 40%. This was stemmed by frequent out of stock, low order fill rate and poor fulfillment from other sources. Before introduction of Prime Vendor system, health facilities were purchasing health commodities by using a quotation system from different wholesale pharmacies by the facility funds collected from insurance schemes and user fees. However, such purchases were involved with uneconomic procedures, bureaucratic issues and other opportunity costs such as travel allowances and perdiem. However, the costs of the products were extremely high due to the reason that they were after-quality products. In this scenario a low costed product was considered of low quality. (6)

In Tanzania the Prime Vendor system was established in 2014 in Dodoma region as a pilot region followed by Shinyanga and Morogoro in 2016 before it was launched countrywide in November 2018. The aim of this establishment was to complements normal government supply through a regional agreement approach. The Prime Vendor has been incorporated in the local government structure to enhance decentralization policy. It is operated by adhering to the public private partnership model which enables procurement of missed items from MSD to the facilities through a prime vendor.

1.2 Problem Statement

A 2022 review of Tanzania's national supply chain showed that, even though some vertical programs had helped, there were still not enough essential medicines available, which led to frequent stock-outs at health service delivery points(7). In the Dodoma region, a comprehensive baseline survey done in 2011 showed that **53 percent** of essential medicines were available and **47 percent** of them were out of stock. The number of orders that Medical Stores Department was able to fill was **58.6%.** MSD's lack of stock and low order-fulfillment

rates mean that there is a supply gap of more than **40 percent** that needs to be filled by other sources.(6)

The reports from the ministry of health show that the availability of the essential items countrywise is below **70%** which is the similar case in Singida region. The availability of less than 70% is below the WHO recommended threshold of **80%.**

The Government of Tanzania through its annual budget has been allocating sufficient funds for the purchase of health products. In addition, the health facilities have been receiving funding through various sources such as direct payments, National Health Insurance Funds (NHIF), iCHF, council own sources as well as other insurance schemes. Despite these huge investments, the issue of availability of health products remains a major mystery and leads to widespread complaints from the public.(8)

The Medical Stores Department (MSD) has been receiving grants annually but still has failed to ensure reliable supply of the health commodities to health facilities. Following this, The Government in November 2018 introduced the Prime Vendor System nationwide to be able to find one supplier who will distribute health products where there is a shortage at MSD. Contrary to these expectations, health facilities still have severe shortages of medicines and medical supplies, a situation that forces citizens to buy medicines and medical equipment outside of hospitals where the cost is higher than if they were available in a hospital.

Since the introduction of the Prime vendor system in November 2018 through a document issued by the President's Office Regional and Local Government (PORALG), availability of the health commodities in health facilities has not been satisfactory and led to many complaints from citizens as well as politicians. The reports from the ministry of health have shown that of the 290 essential items, the availability of these health commodities in Singida is below 70% *(Ministry of health report 2020*)

1.3 Purpose of the study

The purpose of this study was to analyse the effectiveness of Jazia Prime Vendor System (private public partnership) in improving the availability of health commodities in Singida Region, Tanzania.

1.4 Aim and objectives

1.4.1 Aim of the study

The result of this research is to help the government to make the right decisions on the operation of the Jazia prime vendor system in strengthening the availability of health commodities in the country.

1.4.2. Objectives

1.4.3. General Objective

To analyse the Effectiveness of the JAZIA Prime vendor in complementing Medical Stores Department (MSD) in Singida Region

1.4.4. Specific Objectives

- To determine the impact of implementation of Jazia Prime Vendor System as a public private partnership in improving health commodity availability in public health facilities before and after November 2018.
- To evaluate the role of implementation of Jazia Prime Vendor System as a public private partnership in improving order fulfilment rate at health facilities
- To determine the role of Jazia Prime Vendor System as a public private partnership in improving the performance of the supplier to timely deliver consignments to health facilities
- To assess the role of Jazia Prime Vendor System as a public private partnership in improving the responsiveness (number of days) of health facilities to settle payment to the Prime vendor.

1.5 Research Questions

- What is the impact of implementation of Jazia Prime Vendor System as a public private partnership in improving health commodity availability in public health facilities (before and after its implementation) since November 2018)?
- What is the impact of implementation of Jazia Prime Vendor System as a public private partnership in improving order fulfilment rate at health facilities?

  What is the role of Jazia Prime Vendor System as a public private partnership in improving the performance of the supplier to timely deliver consignments to health facilities? To what extent has Jazia Prime Vendor System improved on timely delivery of consignments to health Facilities?

- Has Jazia Prime Vendor System as a public private partnership improved the responsiveness (number of days) of health facilities to settle payment to the Prime vendors?

1.6 Significance and anticipated output

This research will assist the government in determining the efficiency of the PVS in reducing the problem of healthcare stockouts in public health facilities. The study will also assist the responsible authorities in improving the Jazia prime vendor system so that it can provide more benefits to improving access to health care products in health facilities.

1.7 Study Delimitations

This study was carried out in Singida region with a total of seven councils. The total number of public health facilities is 209. All councils were involved in this study and a total of 138 health facilities were sampled.

The designed checklist was used to collect data from the documents. The checklist covered all information about the objectives of this study. A simple questionnaire was developed and used to collect information about the prime vendor system operation.

1.8 Study Limitations

Some information needed were not captured due to missing of some documents. For example, in some facilities data on payment of the prime vendor were missing and in Manyoni and Mkalama district councils some files containing facilities orders were missing.

The prime vendor system is a new strategic outsourcing in Tanzania; hence few resources were available. However, few countries have implemented this kind of strategic procurement.

1.9. Scope of the study

The purpose of this study was to analyse the effectiveness of Jazia Prime vendor in complementing MSD in the eight councils of Singida region for the year 2017 and 2019 which entails a year before and after introduction of Jazia prime vendor system in the region. The study analysed the effect of Jazia prime vendor in ensuring the availability of the health commodities based on the four specific objectives namely, timely payment, availability of health commodities, timely delivery and order fulfilment.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 OVERVIEW OF THE STUDY

Medical Store Department (MSD) is one of the institutions in the Ministry of Health which is tasked with procurement, storage, distribution, and manufacture of health commodities. This is the main supplier of health commodities to all health facilities in Tanzania ranging from dispensaries to national hospital. Health facilities submit orders bimonthly to MSD and in turn MSD delivers consignments directly to the corresponding facility.(8) However, MSD is currently facing significant challenges in reaching its customer base. The main bottlenecks are low order fulfilment, extended lead time and ineffective mechanisms for delivering back-ordered of health products. (9)

Despite some advancements made by vertical programs, an assessment of Tanzania's national supply chain in 2013 indicated that general basic medicine availability remains low, resulting in frequent stock-outs of medicine in the Service delivery points.(2)

Access to the usage of health care services is facilitated by the availability of sufficient essential medicine in health facilities that are constantly replenished. However, it has been observed that regular shortages of medications affect the use of healthcare services.(10).

MSD had a stock-out rate of 46% and an order-fulfillment rate of 59%, according to a survey conducted in Dodoma in 2012.(10). However, it was observed that the acquisition of additional medicines has been described as fragmented, inefficient, and opaque.

Framework agreements are also used by a variety of other national governments and multilateral organizations in a variety of settings and procurement systems. For example, in the United States, Prime vendor contracting is organized into areas in which contracts are granted through a competitive process to the vendor or combination of vendors who offers the best value to the government.(4)

In Chile a government-wide electronic procurement system known as ChileCompra was implemented in 2010 to allow government agencies to benefit from the advantages of contracting purchasing while maintaining the flexibility of decentralized ordering.(4)

Delays in receiving funding from the Ministry of Finance, poor forecasting of drug demands at the facility level, theft, and ineffective mechanisms for fulfilling back-ordered items are only some of the recent issues that have impeded the MSD's capacity to successfully service all institutions.(11).

2.2 Theoretical Literature Review

2.2.1 Public private Partnership (PPP)

Tanzania's government had set up a regulatory and institutional framework and a strategy for making public-private partnerships work (PPP). The goal of the policy was to improve health and nutrition services. The government works with private providers to make sure that Service Agreements work well and lead to more accountability and transparency for how health resources are used. This makes sure that quality health services are available to everyone. So, JAZIA (PVS) is a good example of PPP because it uses the PPP policy framework to work with the private sector to improve health services (such as the availability of goods). This was geared by the Health Sector Strategic Plan (*HSSP IV 2015 to 2020*) and its newest version *HSSP V June 2021-June 2026*.(11)

A study done in Rwanda about the importance of PPP showed that the private entities in Rwanda plays a big role in HSCM through PPPs. When the private sector gets involved, it can help raise more money for HSCM activities as the supply of health supplies and equipment.(12)

2.2.2 Decentralization by Devolution (D by D) Policy (1996)

Decentralization by Devolution as commonly known as D by D supports Direct Facility Financing (DFF), a development which favors the implementation of JAZIA (PVS). The major objectives of D-by-D program are: -

- To improve quality, access and equitable delivery of public services
- To improve governance, financial management, decentralization of public services and separations of functions, encourage community decision making, and to improved transparency and accountability.

The direct outcome of the D-by-D Policy are Direct Facility Financing (DFF) and improved financial management and service delivery through Facility Financial Accounting and Reporting System (FFARS). FFARS has been developed to respond to the growing need for improved financial management skills at the service provider or facility level(13)

2.2.3 Jazia Prime Vendor

In the past, supplementary funds (SF) from the health facilities were used to procure health commodities from a variety of private vendors (Suppliers), but with the introduction of Jazia Prime Vendor such funds are used only for purchases from the designated regional Prime Vendor (PV). A typical prime vendor system works as depicted in the figure below, (*Jazia Operational Manual*)

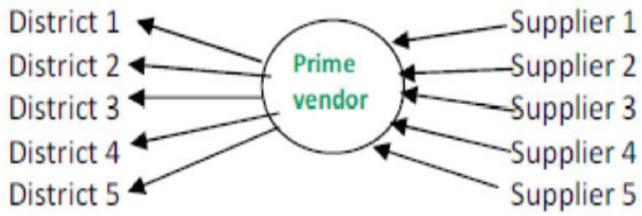

Figure 1How PVS works

Through a regional pooled procurement framework contract (on the basis of PPP), each region and its councils, will make their orders and payments for complementary health commodities from one Prime Vendor, benefitting from lower prices. (2)

The prices that come from the contractual PV are set fixed and are comparable to MSD costs. Because of this, healthcare facilities are able to handle their own funds in accordance with standard operating procedures (SOP), which contributes to increased fiscal decentralization. (2)

The Jazia Prime Vendor System operate when the MSD has declared out of stock from their zonal stores.

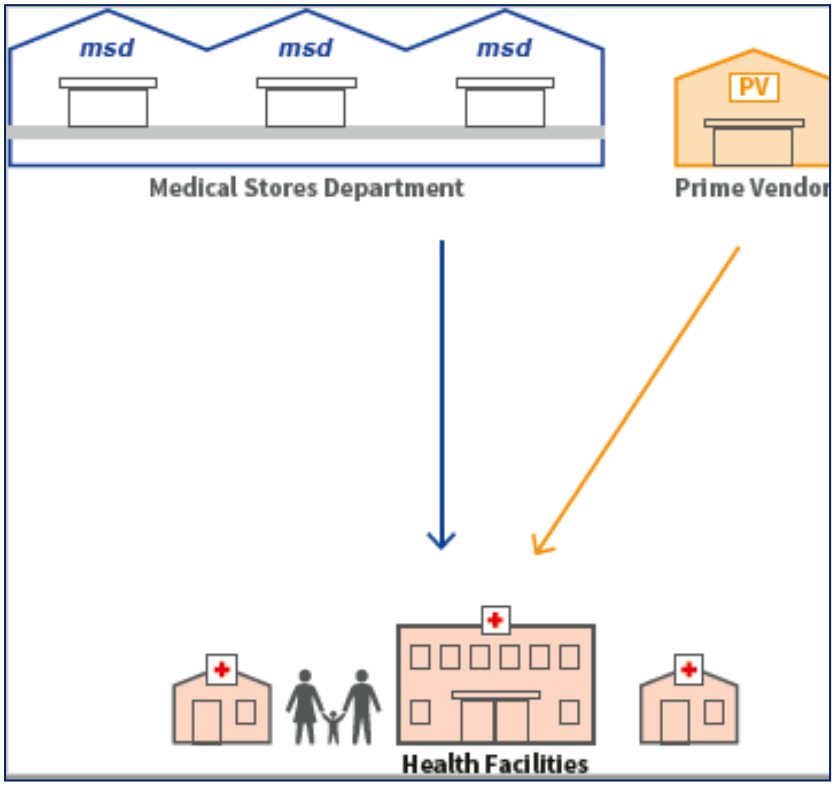

Figure 2 ***WHEN MSD IS STOCKED OUT, PVS WORKS…*** ***Fig courtesy by HPSS***

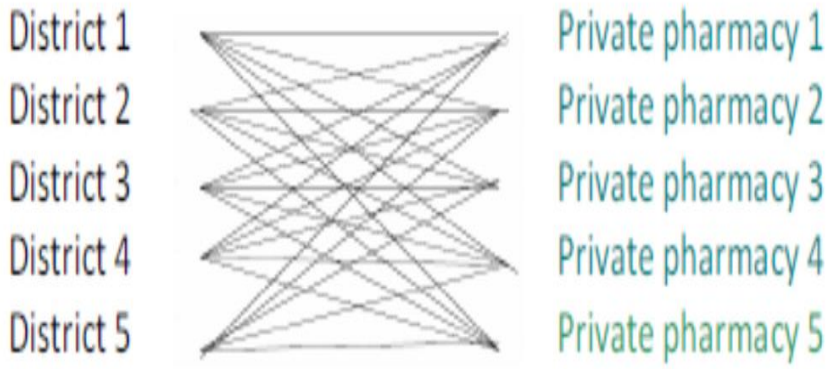

Figure 3Erratic purchases from multiple private sources before PVS...Courtesy by HPSS

2.2.4. Health Commodity Performance

The health commodity performance refers to the organised procedure of measuring the efficiency and competence of Supply Chain processes. It also refers to the protracted supply chains events in meeting client supplies, including product availability, on-time delivery and on timely payment on the side of the customer.

2.2.4.1. Health Commodity Performance – Health commodity availability

Health commodity availability is affected by several factors which includes human factors (Professionals like pharmacists, procurement officers) challenges due to transport system, poor inventory management system, and financial constraints. Lack of enough pharmacy personnel in the facilities with some not even trained on commodity management is a contributing factor to lack of available tracer essential medicines.

A study done in Kenya has shown that one of the reasons for unavailability of the health commodities is untimely budgetary allocations to the health facilities. It also highlighted the fact that reliable transport is a significant factor for ensuring timely delivery of health commodities.(14)

Policies and guidelines are the main tools when properly adhered to, can lead to the reliable availability of health commodities in the health facilities. (15)

2.2.4.2. Health Commodity Performance – Order fulfilment

This is the performance indicator which measures the percentage of orders regarding their requests. It measures the quantity received versus quantity ordered by the health facilities.

This indicator measures rate of order fulfillment by the Prime Vendor. This relates to either:

- The number of lines supplied against the number of lines ordered = $\frac{\text{Lines supplied}}{\text{Lines Ordered}} \times 100$

OR

- Value of items supplied against value of items ordered = $\frac{\text{Value of supplied}}{\text{Value ordered}} \times 100$

Both methods can be used to countercheck the calculated fulfillment rate. If the prices are fixed the value for the two methods should be the same.(6)

2.2.4.3. Health Commodity Performance – On timely delivery

This indicator measures the percentage of all orders supplied by the vendor by taking int consideration the delivery date, as indicated in the contract during a defined period of time. It is a metric system which measures how well a delivery operation is working or not. The

indicator works by measuring on time delivery (OTD), number of deliveries and order accuracy. (14)

The delivery process is a first part of supply chain operations, and delivery performance is a strategic performance measure. Poor delivery process performance may impact operational costs. It is always a bad practice such that when the delivery lead-time is uneven; there will always be some deviations around its goal achievement. Untimely deliveries lead to inefficiencies and additional costs into the supply chain. In Jazia a practice in Tanzania which complement stocked out items from MSD, on timely delivery is measured by taking an average number of days it took to deliver health from council headquarters to respective health facilities.

2.2.4.4. Health Commodity Performance – Responsiveness of providers on payment

Payment must be made on time in order for goods and services to be delivered efficiently to all entities in the supply chain (16). A study conducted in India, has shown that earlier payment to the supplier will automatically increase supplier performance in restocking and reissuing of the requested consignments.

Payment to Prime Vendor should be done within contractual period, unless encumbered by serious technical issues, such as the delivery of unacceptable products. This indicator measures the average time it took to pay the vendor for all consignments delivered in a quarter. Council/entities that consistently make payment late should be approached to remedy the situation.(2)

2. 3 Empirical Literature Review

Determinants or summary of factors associated with topic

2.3.1 Health commodity availability in public health facilities

The study conducted in 2018 at Pakistan has shown that, medicine the availability of medicine was greater at private hospitals and pharmacies as compared to public health facilities which made the higher income personnel to access medicine.(10)

In 2018 a study from Brazil has showed that, the average availability of essential medicines in primary health facilities was 52.9%, with variation amongst regions. (10)

In 2011, a survey found that less than 60% of essential medicines are available in health facilities in some parts of Southeast Asia and Africa. Some countries, medicine is expected to be unaffordable for the majority of the population due to a lack of public medicines and universal healthcare.(17)

The study, conducted at Gondar University in Ethiopia, found that the total average availability of essential drugs was 79.17 percent. In the previous six months, the mean stock out was 41.67 percent. The hospital's average duration of stock outs of vital drugs was 31.7 days over the last six months, and the average frequency of stock outs was 0.7.(18)

An adaptation of the WHO/HAI methodology was used by Mendis et al. in their study that was conducted in 2007 to evaluate the presence and ability to procure medicines to treat several diseases. They found that the availability of common medicines in the public sector in Pakistan did not exceed 7.5 percent.(19)

In 2010, provincial, district, and sub-district hospitals in Nakuru County had an average availability of 50 percent for common classes of medicines, while lower-level facilities had an average availability of 60 percent for essential medicines in stock. This information was obtained from national data collected by the pharmaceutical agency. On average, hospitals owned 53 percent of the entire inventories in 2011, while lower-level facilities retained 60 percent of the overall stocks.(20)

Tracer medication availability increased from 69 percent in 2014 to 94 percent in 2018, according to a pilot study done in Tanzania. Procurement processes are streamlined, standardized, transparent, and well-managed. At all levels of the health system, procurement capacity was improved. The Prime Vendor system pilot was extended out to all 26 regions of mainland Tanzania in November 2018, on government order (6)

Following the completion of a productive pilot project in Dodoma, Morogoro, and Shinyanga in 2016, Tanzania started implementing a PPP program in 2018. Under this program, all orders for missing MSD commodities from public healthcare facilities are procured from a single contracted supplier known as the prime vendor. The system was given the designation "Jazia prime vendor system. When compared to the standard delivery time of MSD, which is 20 days on average, the standard delivery time from the Prime Vendor is only 14 working days.(8)

According to the findings of the study, after the deployment of Jazia PVS in the pilot zones, there was an increase in the number of critical drugs that were available for purchase. It was

discovered that the average availability of necessary drugs for specific facilities ranged from 90 percent to 100 percent during the time that the data was collected (middle of 2018).(11)

2.3.2 Order fulfillment at health facilities

According to the findings of a survey that was carried out in Ethiopia, the percentage of orders that were fulfilled at a rate of more than 80 percent, which is regarded as satisfactory, was 14.81 percent, while the average order fill rate was 52.9 percent. The investigation revealed that out of a total of 14 purchases of program commodities, there were three (or 21.43 percent) emergency orders placed for 17 different items. Because of this, the plant was at a greater risk of experiencing supply disruptions and stock outages.(21)

The Medical Stores Department (MSD) is Tanzania's primary supplier of pharmaceuticals and other health products. However, the organization struggles to fulfill requests from healthcare facilities, resulting in stock-outs at service distribution sites.(6)

Regional and district managers reported that the average delivery period was 14 days. Nonetheless, there were considerable obstacles in transporting the shipment from the district office to the health facilities. Late delivery were caused by a lack of transportation, communication problems caused by weak cell phone signals, and delays in the facility's processing of orders for delivery to the districts.(2)

2.3.3 Suppliers performance (timely delivery) of the consignment (lead time)

According to a research done in the United States, prime vendors are chosen because they make it easier for government facilities to acquire pharmaceuticals and medical supplies, with delivery from a supplier office to the procuring facility.(4)

According to a study conducted in South Africa in 2020, provinces rely on direct delivery of pharmaceuticals from contracted suppliers to healthcare facilities, which shortens the supply chain to below the contracted lead times of 21 days and eliminates the risks and costs associated with warehousing and distribution.(22)

The Kenya Medical Supplies Authority (KEMSA) which is the sole distributor of health commodities its timely delivery is 93.8% while the performance of private suppliers in delivering the consignment timely to the health facilities is 96.9%. (23)

A study in Tanzania found that private suppliers satisfied contractual requirements to supply pharmaceuticals to health facilities with a 10-day average lead time, ensuring the availability of health commodities.(2). It is important that a vendor conforms with agreed delivery led time to guarantee that the needed products arrive on a timely basis for patients use. On timely delivery of the consignment measures the efficiency and compliance of the Prime Vendor in meeting contractual delivery lead-times

According to the Jazia Prime Vendor handbook, ordered goods should be delivered to contractual place. Doing otherwise may affect timely use of such goods. The normal order from the Prime vendor should be delivered within 14 working days and 5 days for emergency order.

2.3.4 Responsiveness of health facilities to timely payment to the supplier

A study done in Iran has shown that, Pharmaceutical strategic purchasing is effective when the best supplier is selected and payment to the supplier is done timely with the most rational price and payment structure.(24). It is said that, when suppliers are not paid timely, they opt to delay delivering the consignment which in turn results into shortages of health commodities

A study in Gauteng South Africa in 2020 found that late supplier payments led to pharmaceutical shortages in hospitals. Suppliers who were not paid on time did not deliver products to hospitals. As a result, desired drugs were unavailable.(22). According to the Public Finance Management Act (PFMA) no. 1 of 1999 specifies that suppliers should get paid within a thirty (30) day period from the day of acceptance of a valid invoice.

Another study conducted in Kenya in 2017 found that irregular funding causes payment delays, worsens procurement issues, and lengthens lead times, resulting in pharmaceutical shortages.(25)

The Jazia PVS will be able to run smoothly if the facilities have buy medical supplies from the main supplier timely so that there is no delay of delivery by the Prime vendor. (8).

2.4. Summary of literature review

Availability of health products in the public health facilities is highly influenced by some operational factors which includes on timely delivery of the consignment from the suppliers, order fulfillment which include items and quantities, shorter lead time and the timely payment of the supplier.

It has been observed that, late payment of the supplier may affect the performance of the supplier in delivering the consignment which may in turn affects the availability of the health commodities to the facilities. Therefore, the earlier the facility pays the supplier the greater the performance in delivery of the consignments.

In Tanzania, the government is using a framework agreement known as Jazia Prime vendor to complement health commodities when MSD has failed to supply in full. This system works better when the supplier supplies the consignment timely but in full ordered items and quantities. On the other hand, the performance is enhanced when the facilities pay the vendor on timely basis.

Therefore, the availability and accessibility of health supplies in the health facilities through the Jazia Prime vendor will only be possible when all parts play their roles per the contractual agreements.

2.5 CONCEPTUAL FRAMEWORK

The prime vendor system was established to ensure that there is constantly availability of the health commodities, Orders and items are fulfilled a hundred percent, The health facilities pay the prime vendor timely to capacitate the supplier and the facilities to receive the items timely.

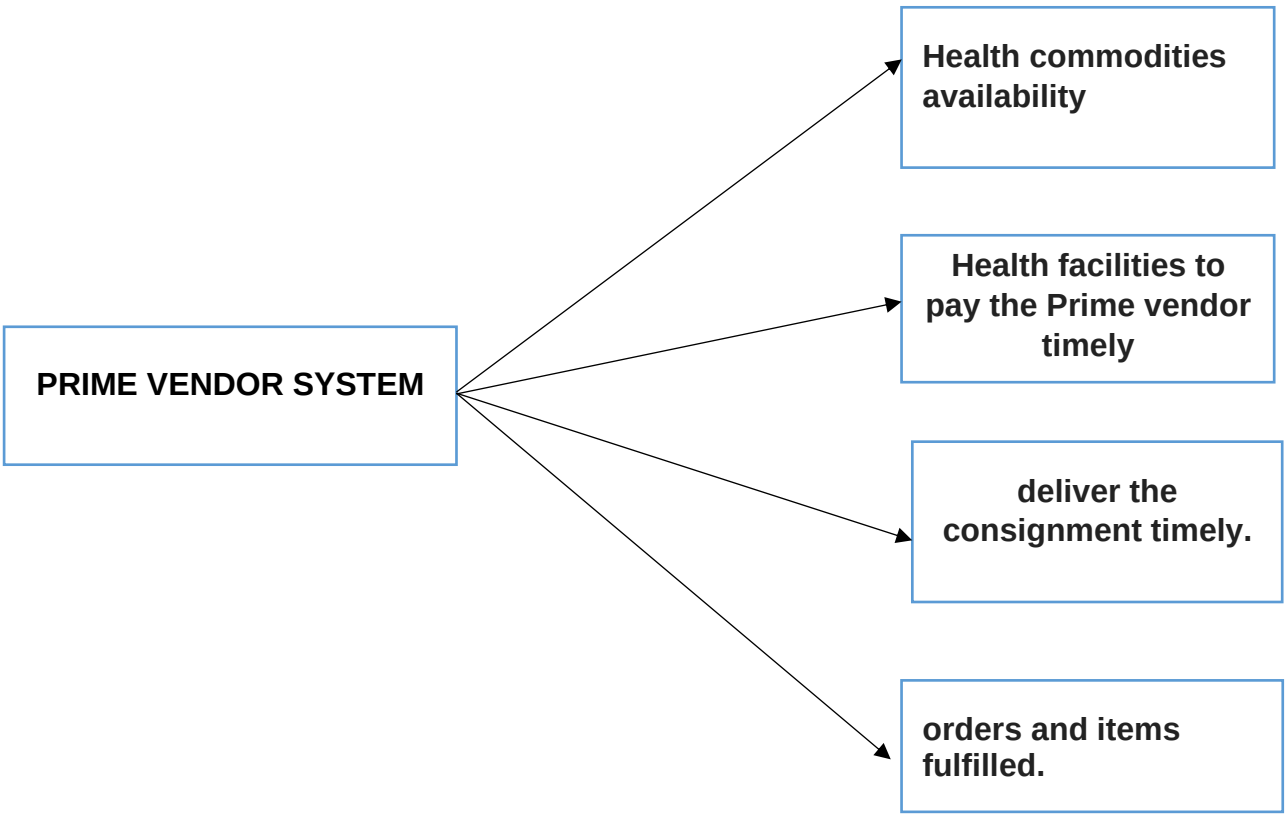

Figure1. Conceptual framework developed from the literature review Developed by a researcher.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Research Design

This is the descriptive cross-sectional study which analysed the effectiveness of the Jazia Prime Vendor system in complementing the Medical Stores Department in ensuring availability of the health commodities in Singida region. The descriptive study was employed to answer questions relating to how and what are the reasons for failure or performance of the prime vendor system.

The study reviewed documents across the selected health facilities to respond to the main questions. A simple questionnaire was employed to get an overview of how Jazia Prime Vendor is considered by health care providers in the facilities.

Cross sectional studies collect information which occurred at one specific period, therefore the information concerning lead time, timely payment, order fill rate and the percentage availability of the health commodities were collected through this kind of study.

The study analysed data one year before the start of Jazia PVS and one year after Jazia PVS. This period has been considered to avoid the effect of Covid-19 in supply of health commodities following closure of most industries and disruption of supply chain worldwide.

3.2 Location of the Study

The study was conducted in Singida region. Singida was chosen because the region has been implementing the Jazia Prime Vendor System since November 2018, following directives from the President's Office regional and local government. Singida region consists of the following councils: Iramba District Council, Mkalama District Council, Manyoni District Council, Itigi District Council, Singida Municipal Council, Singida District Council, and Ikungi District Council. According to the 2012 Population and Housing Census, the population of Singida Region is 1,370,637.

Figure 4 The Map showing District Councils in Singida Region

3.3 Target and study population

The study sought to find out the performance of Jazia PVS in all public health facilities in Singida region. The region consists of 209 public health facilities, which are 1 regional referral hospital, 4 district council hospitals, 19 health centers, and 185 dispensaries. (*RMO's office 2021*).

Publicly owned health care facilities were included in this study because they are contracted through the Prime Vendor System. However, only public facilities submit orders to the MSD, and in the event of a stock out, they are compelled to place an order with the Prime vendor for the missing items.

3.5 Samples and Sampling

Singida region has a total of seven district councils with a total of 209 public health facilities. All councils were included in this study. The number of facilities per each council were selected randomly basing on the probability proportional to size sampling.

Below is the distribution of health facilities in Singida region. (*Source RMO's office*)

	Council	Dispensaries	Health Centre	District Hospital	RRH	Sample size calculated	
	Iramba DC	30	4	1	0	23	
	Mkalama DC	28	3	1	0	21	
	Manyoni DC	33	2	1	0	24	
	Itigi DC	17	2	0	0	13	
	Singida MC	11	2	0	1	9	
	Singida DC	29	3	1	0	22	
	Ikungi DC	37	3	0	0	26	
	TOTAL	**185**	**19**	**4**	**1**	**138**	

Therefore, a total number of health facilities (N) to be studied was equal to **138**. By using *Yamane's formula*

$$n = \frac{N}{1 + N(e)^2}$$

Where N = Population Size

$e = 0.05$

Then n = 209/ 1+ $209(0.05)^2$

Therefore, n = **138**

The dispensaries were selected randomly while the regional referral hospital, all district hospitals and all health centers were selected due to their higher numbers of orders made to the prime vendor, hence making a total of 138 health facilities (Samples). In this regard, thes tudy took one regional referral hospital, all public district hospitals, all health centers and thirty six dispensaries which were selected randomly basing on the probability proportional to size sampling such that: -

Prob = (a x d)/b

Where

a-cluster population

b-total population

d-number of cluster

Sample size for Singida Municipal Council

(14 x138)/209 = 9

Sample Size for Iramba District Council

(35 x 138)/209 = **23**

Sample size for Itigi District Council

(19 X 138)/209 = 13

Sample size for Manyoni District Council

(36 x 138)/ 209 = 24

Sample size for Singida DC

(33x 138)/209 = 22

Sample size for Mkalama DC

(32x 138)/209 = 21

Sample size for Ikungi DC

(40 x 138)/209 = 26

			Distribution of health facilities per council			
	Council	**Sample size calculated**	**Dispensary**	**Health Centre**	**District Hospital**	**Regional Referral Hospital**
1.	Iramba DC	23	18	4	1	0
2.	Mkalama DC	21	17	3	1	0
3.	Manyoni DC	24	21	2	1	
4.	Itigi DC	13	11	2	0	0
5.	Singida MC	9	6	2	0	1
6.	Singida DC	22	18	3	1	
7.	Ikungi DC	26	23	3	0	0
8.	TOTAL	138	**114**	**19**	**4**	**1**

Therefore, a total of 114 dispensaries, 19 health centres, 4 district hospitals and 1 regional referral hospital.

3.4.1 Unit of Analysis and Unit of Observation

The unit of analysis from each facility were ***Health facility incharge, procurement expert, finance expert and Pharmacy incharge*** who were drawn for the study. Thus, each facility involved four experts, hence, the total sample will be 138 X 4=552

In this study the units of observation were documents (Sales invoices, orders, payment vouchers) which were reviewed from the pharmacy store and accounting office.

3.4.2 Inclusion Criteria

- All public health facilities were chosen.

3.4.23 Exclusion Criteria

- Nonpublic health facilities were not included.

3.6 Data collection instruments

The researcher collected data using a special designed tool (Annex 1) that he developed and the questionnaire (Annex II) to collect some information about Jazia PVS from the health care providers. The tool collected historical data by reviewing invoices from suppliers, orders submitted to the prime vendor, the electronic Logistics Management System (eLMIS), and payment vouchers. However, to ascertain the instrument's suitability, a pilot study was conducted at one health center and one dispensary in Manyoni DC.

The tool was developed in consideration of the specific objectives that were investigated. So, the tool collected data, including percentage availability of health commodities, lead time calculations, order fulfillment and performance evaluations that consider timely payment as well as on-time delivery of consignments.

There was a simple questionnaire which was used for collection of data relating with timely payment, timely delivery, order fill rate and availability of the health commodities. (Annex 2).

3.7 Pre-Testing

The instrument was pre-tested at the two health facilities in Manyoni District Council to find out if it captures all of the data needed to answer the study questions.

3.8 Validity

Validity is a way to measure how well a measuring tool does its job. It means that the measuring tool measures the behavior or quality it is supposed to measure.(26)

To maintain validity, all the data obtained were gathered from similar documents and from the same electronic system, the tool has been built to ensure that the quality of the data collected is not compromised over time. It gathered information based on the similarity of the sources of the documents to be analyzed.

3.9 Reliability

Reliability is the ability of measuring tools to give the same results even when they are used at different time.(26). To ensure the tool, produce data which are reliable. Pretesting was done to the two health facilities and data collectors were coached on how to capture the data consistently.

According to the reliability results, Table 1 below, the alpha coefficient for a test scale based on all items is 0.899, indicating that the findings are not limited in applicability, and thus the test scores are more repeatable or reliable. There were no items with any number of non-missing values; each item has a (+) sign to indicate the direction in which an item variable entered the scale.

Table 1: Reliability test

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Inter-item covariance	alpha
Has Jazia PVS improved the availability of the health commodities in your health facility	138	+	0.8541	0.779	0.8517	0.974
Does the Prime vendor fulfill the order per your request?	138	+	0.6796	0.801	0.91907	0.808
Do you recommend Jazia Prime Vendor in complementing Medical Stores Department?	138	+	0.7888	0.677	0.845954	0.722
Test-scale				0.745		0.899

4.0 Variables and measurements

In this study there were four dependent variables namely, availability of health commodities, order lead time, order fulfilment and on time payment. The study had one independent variable which is the prime vendor system.

Availability of commodities at health facilities, was analyzed and compared between the average before Prime vendor and after prime vendor. This percentage availability was extracted from the eLMIS system during the study period.

In terms of order lead time which is the number of days taken by Prime vendor to deliver consignment, it was calculated from time taken to order health commodities to Prime Vendor

and days taken to receive health commodities at the health facilities. This parameter was measured from the date order was sent to the prime vendor and subtracted by the date the invoice/delivery note signed by a recipient.

However, percentage of order fulfillment rate by Prime Vendor to health facilities was analyzed by calculating the difference between ordered commodities against received commodities. The parameter was measured by taking the difference between ordered quantities versus received quantities.

The percentage of on timely payment by health facilities to the prime vendor was analysed by counting number of days the consignment versus the day payment was done to the prime vendor.

4.1 Data Collection procedure

Data was collected in 138 sampled facilities within all councils Iramba, Itigi, Mkalama, Singida DC, Ikungi, Manyoni and Singida Municipal in Singida region. In each council data were collected from the health centres, dispensaries, and district hospital (where available). For the Singida municipal, a regional referral hospital was included.

In collecting data for the **percentage availability** of the health commodities, a tool 1A was used for gathering data from the eLMIS for data from 2017 before the starting of Jazia PVS and data from 2019 after implementation of Jazia PVS. These data were collected through the eLMIS system on first day of the visit.

Data collection for order fill rate were gathered by using checklist 1B whereby a data collector visited the pharmacy store and capture from the submitted orders the quantities which were ordered versus quantities which were received from the invoices.

Data collection for **the number of days the consignment was delivered** to the health facility were gathered by using a checklist form 1C, whereby a date of order submission was collected from the submitted orders by using a date seen through the email of district pharmacist or a printed email. The date for delivery of consignment from the prime vendor to the district council was taken from the invoice at the pharmacy store, and that of delivery from the district council to the health facility was taken from the delivery note at the health facility.

The number of **days taken by the facility to pay the prime vendor** was collected from the payment voucher at the health facility. This data was collected by taking the exactly date the shipment was received at the council to the exactly date the imbursement was done.

Data were collected from the office of the district pharmacists (Prime vendor coordinator), facility Incharge and at the account's office.

4.11 Method of Data Analysis

SPSS version 25 was used for statistical analysis. All probabilities were two-tailed, and p-values which were found to be less than 0.05 were significant. To provide an overview of the variables in the study, descriptive statistics were used for all objectives. Inferential statistics, including the Paired sample T-Test, used to calculate the mean difference in commodity availability in public health facilities before and after PVS.

The percentage of each health facility's availability of health commodities was analyzed and compared between the average before Prime vendor and after Prime vendor.

In terms of order lead time, which is the number of days it takes the Prime Vendor to deliver a consignment, it was calculated by subtracting the time it took to order health commodities from the Prime Vendor and the days it took to receive health commodities at the health facilities.

However, the difference between ordered and received commodities was used to calculate the order fulfillment rate by Prime Vendor to health facilities.

The percentage of on-time payment by health facilities to the prime vendor was calculated by counting the number of days between the consignment and the day payment was made to the prime vendor.

4.12 Logistical and Ethical Considerations

The IRB of the University of Rwanda helped to give a letter for permission to conduct this study. The IRB introduced the principal investigator at the President's office Regional and Local Government. After that, the PORALG introduced the principal investigator to the Regional Administrative Secretary (RAS) at Singida Region, the Regional Medical Officer (RMO), and all District Medical Officers in the facilities where the study was done.

Before consenting to the study, each facility in charge was provided with comprehensive information regarding this study. All facility in charges agreed to participate in this study.

Confidentiality

The information gathered by the PI were only used for study and no disclosure was done without consulting the relevant authorities.

Risks

The study did not produce any harmful effects to the facilities rather the results obtained were analysed and later used to inform decisions on improving the implementation of the JAZIA/PVS swiftly and effectively.

CHAPTER FOUR

4.0 RESULTS, DISCUSSION, AND INTERPRETATION

The results presented here relates to the specific objectives (four) according to this study. They include: The percentage availability of health products, order fulfillment rates, Order lead time and the time (days) taken by the health facility to pay the Prime Vendor.

4.1.Status of health commodity availability in public health facilities (before November 2018) and after implementation of Jazia Prime Vendor (January – December 2019).

Products should available at all time and whenever needed. According to the findings, the maximum average availability of health commodities prior to PVS was 70%, and the maximum average availability after PVS was 74%. This translates to a 4% increase following the introduction of the regional Prime vendor. The mean before PVS was 54.39 while the mean after PVS was 59.17 which translates to an increase mean of 4.78.

Table No. 1. Availability of health commodities before PVS (2017) and After PVS (2019)

	Year	**Minimum (%)**	**Maximum (%)**	**Mean**	**Std. Dev.**	**Variance**
JAN_MARCH	2017	34	68	51.99	6.629	43.939
	2019	33	75	54	9	80
APRIL_JUNE	2017	34	70	54.01	6.374	40.628
	2019	29	75	58	8	62
JULY_SEPT	2017	39	71	54.90	6.833	46.690
	2019	38	79	61	8	71
OCT_NOV	2017	40	81	56.06	6.893	47.515
	2019	41	85	64	9	76
Average Before PVS	2017	39	70	54.39	5.363	28.765
Average_after_PVS	2019	37	74	59.17	6	37

Difference in the availability of health supplies in health facilities before and After PVS (N=138)

With a sample size of 138, the mean value was compared before and after PVS. The mean was higher after PVS (M=59.17, SD=6.12) than before PVS (M=54.39, SD=5.36). The difference in means (difference=4.779) was statistically significant (t (138) =-9.488, p<0.001). The findings indicate that commodity availability was significantly higher after PVS than before PVS (table 2 and Table 3). Despite this, the increase is very little, this corresponds to the study done in Dodoma by Karin Et al (27) which showed an increase in availability of health commodities after introduction of PVS from 69% in 2014 to 94% in 2018 during a piloting phase where there was involvement of implementing partners to support the pilot phase.

Table 2: Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Average_Before_PVS	54.39	138	5.363	.457
AverAge_after_PVS	59.17	138	6.117	.521

Table 3: Mean difference of availability of commodities in public health facilities Before and After PVS

Paired Samples Test

	Paired Differences							
			Std. Error	95% Confidence Interval				Sig. (2-tailed)
	Mean	Std. Deviation	Mean	Lower	Upper	t	df	
AverAge_after_PVS - Average_Before_PVS	4.779	5.917	.504	3.783	5.775	9.488	138	.000

Table 4 below shows that, the number of participants in the health facilities who were responding on how Jazia improved the availability of the health commodities, 93(67.39%) said there was no improvement of health commodities availability following introduction of Jazia Prime vendor in their respective facilities while 45 (32.61%) said there is an improved availability following Jazia prime vendor.

Table 4: Jazia PVS improved the availability of the health commodities in your health facility.

Response	Frequency	Percent

Yes	45	32.61
No	93	67.39

Table 5 below shows that the number of participants who do not recommend Jazia prime vendor is higher 128 (92.75%) compared to the number of participants who recommend Jazia prime vendor 10 (7.25%). The results correspond with the data collected from the checklist which showed that there is only a slight increase of availability of the health commodities after PVS.

Table 5: Do you recommend Jazia Prime Vendor in complementing Medical Stores Department?	**Frequency**	**Percentage**
Yes	10	7.25
No	128	92.75

Discussion: Descriptive statistics were used to summarize the availability of the health commodities before and after introduction of PVS in Singida Region. Then 't-tests' was used to assess whether there is a difference in proportions among the seven councils in the region.

The results shows that there is no significant increase of health commodities availability before Prime vendor system (70%) and after prime vendor system (74%). This result does not meet the WHO criteria of health commodities availability which recommends that at least 80% should be stocked.

It was found that, during the study period, most of the health facilities did not have enough funds to procure health commodities because the receipt in kind which was provided by the Central government for the purchase of health products was not released since 2017. Therefore, the limited funds which was collected by the health facilities from the clients was used for the operation of the health facility as well as procurement of health commodities both from the MSD as well as from the PVS, of which on both sides the supply to the facilities was also very low. However, most health facilities could not allocate 50% of their generated funds for the purchase of health products as the directions being given by the Ministry of Health.

From the findings, it was observed that during the survey that, most Dispensaries and Health centers did not stock all the items that are supposed to be stocked all the time as per the Ministry of health guideline which is 141 items for dispensary and 219 items for the health centers. However, most stocked items were vertical (programmatic) items such as Antimalarials, anti TB, ARVs and RMNCH commodities which were delivered free from MSD.

The results are almost similar to the study done by (15) which showed that a mean public sector availability of medicines ranged from 29·4% to 54·4% among the 36 countries which the study was conducted. The study also revealed that improving medicine policy and promotion of generic medicine and improving financing mechanism will lead to more health commodities availability across the countries. This is also similar to this study because from 2017 to 2020 government did not provide receipt in kind to the public health facilities leading to shortfall of health commodities availability.

The study done in Dodoma region in 2018 (6) showed that the availability of health supplies in health facilities in the region increased from 69% to 94% after establishment of Prime vendor system. The results differ from this study conducted in Singida region as the results showed an insignificant increase in availability of health commodities following establishment of the prime vendor system whereby the mean availability before PVS was 54.39 and after PVS is 59.17. The difference is due to the financing of the health facilities by the central government because the former study was conducted when the government was providing receipt in kind to the facilities. Therefore, other collected funds were used for procurement of health commodities through the prime vendor while the study done in Singida revealed low availability because at that particular time the government stopped giving receipt in kind to the health facilities hence the funds obtained through other financing mechanism was used for procurement both at MSD as well as at the prime vendor.

Interpretation: The results and the discussion infer that, the introduction of Jazia prime vendor in Singida region has no significant increase in the availability of the health commodities in the public health facilities. However, most of the participants do not recommend Jazia prime vendor as the only alternative source to MSD.

4.2. Number of orders fulfilled at health facilities by the regional prime vendor.

The study also assessed the capacity to fulfill orders from the Prime vendor by assessing the number of items ordered versus the number of items received. The results showed that, a total

of **109 (20.3%)** orders were fulfilled as per the facility request while a total of **312 (58%)** were delivered against the facility request, this means that the number of items delivered were less than the items ordered which could be a reason for a satisfactory availability of the health commodities.

Table 6: Order/items delivered as per the order

Council Name	Yes	No
Ikungi DC	21(23.3%)	59(65.6%)
Iramba DC	18(19.6%)	67(72.8%)
Itigi DC	16(30.8%)	32(61.5%)
Manyoni DC	11(11.5%)	50(52.1%)
Mkalama DC	12(14.3%)	39(46.4%)
Singida DC	29(33%)	51(58%)
Singida MC	2(5.6%)	14(38.9%)
Total	109(20.3%)	312(58%)

Table number below shows the responds from providers whereby a total of 133 (96.38%) said that the Prime vendor does not fulfil their orders 100% while a small number of providers 5 (3.62%) said that the prime vendor fulfil the orders per their request.

Table 7: The Prime vendor fulfill the order per your request	Frequency	Percentage
Yes	5	3.62
No	133	96.38

Discussion: The results from the study showed that, PV failed to satisfy the facilities requirements as they suggest that only 109(20.3%) of the total orders were fulfilled per the requirements while 312(58%) orders were not fulfilled. This may lead to unavailability of

the health commodities because once items are not stocked at MSD, the only hope is the Prime vendor, and when it happens both cannot fulfill the facility's demands the rate of stocking out keep on increasing.

The reason that, the prime vendor did not meet customers' demands include lack of capacity to stock all health commodities to serve the whole regions, failure of the health facilities to submit their requirements (addendum) based on their contract and delayed payment of the supplied orders by the health facilities which tends discourage the supplier from meeting the customers' demands.

A study done in Dodoma, Tanzania in 2018 reported that order fill rate after Jazia PVS was 99%(6) however, for this study the rate of fulfilment of order was less than 25%. The difference on these findings is due to the capacity of the supplier in terms of number of items stocked, capacity to restock the delivered items and financial capacity.

Interpretation: The results both from the checklist and questionnaire corresponds that there was a problem of supplier in meeting a contractual fill rate. This could be a reason that led to health commodity unavailability in the health facilities. This infers that the ability of a supplier to fulfill the facilities order was not satisfactorily.

4.3. Performance of the supplier on timely delivery of the consignment

The study also assessed the number of days taken by the Prime Vendor to deliver the consignment at the district council office. The contractual days for delivery of consignment is 14 days since receipt of the order. The results showed that among **320 (58%)** orders were delivered within the contractual period while **114 (20.7%)** orders were delivered beyond the contractual period. However, **118 (21.3%)** of orders were not documented. This shows that the performance of the prime vendor to deliver the consignment on timely was not satisfactoriy as the performance was only 58 percent.

Table 8: Consignment received at council on time as per Contract

Council Name	Yes	No	Not documented
Ikungi DC	68(65.4%)	26(25%)	10(9.6%)
Iramba DC	39(42.4%)	46(50%)	7(7.6%)
Itigi DC	18(34.6%)	30(57.7%)	4(7.7%)
Manyoni DC	61(63.5%)	0(0.0%)	35(36.5%)
Mkalama DC	51(60.7%)	0(0.0%)	33(39.3%)
Singida DC	73(83.0%)	6(16.7%)	9(10.2%)
Singida MC	10(27.8%)	6(16.7%)	20(55.6%)
Total	320(58%)	114(20.7%)	118(21.3%)

Table 9 below shows that, the providers who said the supplier met the contractual days were 5 (3.62%) and those who said the average number of the supplier to deliver the consignment was beyond the contractual period are 133 (96.38%). The results from the questionnaire are like the one from the checklist which shows 320 (58%) of orders were delivered beyond contractual period.

Table 9: The average number of days a prime vendor took to deliver consignment to the district	Frequency	Percent
More than Contractual Days (>14)	133	96.38
Within Contractual days (1-14)	5	3.62

Discussion: The results have shown that, the performance of the supplier to meet contractual delivery days for the request submitted by the facilities was 320 (58%) while 114(20.7%) of submitted request by the facilities did not meet contractual delivery period. This could lead to the prolonged unavailability of commodities in the health facilities because, the time taken by the facility to receive an out-of-stock notification from MSD took more than 14 days and yet the delivery from the Prime vendor also is set contractually to be 14 days leaving behind administrative procedures.

A similar study conducted in 2010 at North India has shown that (58%) of the drugs were received within 20 to 40 days and 27% were received within 40 to 60 days. Only 5% of

drugs took 60 to 80 days (28). The study also showed that the health commodities were delivered partly not in full order. The results differ from the study conducted at Singida as more than half 320 (58%) were delivered within the contractual agreement possibly because the supplier is located near the region.

The results are quite similar to the study done in Kenya, Bungoma county on influence on inventory management whereby 31(96.9%) of respondent said that delivery of the health commodities is done timely by the supplier (23) while in this study 136(96.4%) of the respondent also declared that the supplier deliver the health commodities within a contractual number of days. The effectiveness of the supplier to deliver the consignment timely is influenced by several factors such as distance from the source to the user, reliable transport system from the supplier as well as on timely payment of the user to the supplier which will enhance capacity to restock the supplied commodities.

Interpretation: The supplier performance of delivering the consignment within contractual period was not satisfactorily which is one among the reasons the availability of the health commodities in the public health facilities was not higher as expected.

4.4 Responsiveness of health facilities to pay the Prime vendor in terms of Number of days.

The study also assessed the time taken by the health facility to pay the prime vendor. The contractual period for the health facility to pay the prime vendor was 21 days. The results showed that **164 (29.7%)** orders were paid within the contractual period while **217 (39.3%)** were paid beyond the contractual period. However, **171 (31%)** of orders were not documented. The results are stipulated in table 10 below.

Table 10: Consignment paid on Time as per Contract

Council Name	Yes	No	Not Documented
Ikungi DC	31(29.8%)	63(60.6%)	10(9.6%)
Iramba DC	47(51.1%)	39(42.4%)	6(6.5%)
Itigi DC	13(25%)	9(17.3%)	30(57.7%)
Manyoni DC	9(9.4%)	27(28.1%)	60(62.5%)
Mkalama DC	14(16.7%)	37(44%)	33(39.3%)
Singida DC	41(46.6%)	38(43.2%)	9(10.2%)

Singida MC	9(25%)	4(11.1%)	23(63.9%)
Total	164(29.7%)	217(39.3%)	171(31%)

The result from the questionnaire table 11below, matches with the observation from the checklist as 112(81.15%) agreed that payment of the supplier is done beyond the contractual days (21). Basing on these results it is obvious that, the performance of the prime vendor could not be good because most facilities receive consignments but fail to pay on time which can also results into low order fill rate as the funds for replenishment of the stock is not yet paid by the facilities.

Table 11: How long does your facility takes to pay the Prime vendor after the delivery of consignment?	**Frequency**	**Percentage**
More than contractual days	112	81.15
Within Contractual days	26	18.84

Discussion: The results have shown that most facilities do not pay the prime vendor on contractual days, whereas 158 (28.8%) of orders were paid timely while 194 (35.1%) of were not paid timely and 199(36.1%) documents were not found for the assessment of timely payment of the supplier. Delay payment has consequences of reducing the capacity of the supplier which in turn could lead to poor performance of the supplier.

A study conducted in Dodoma to assess the performance of Jazia PVS on a pilot region revealed that there is a delay of most public health facilities to pay the supplier. This observation is also like this study as less than 30% of the health facilities did not pay within a contractual period, however most documents relating to payment of prime vendor were not available during a period of data collection which indicates that there is mismanagement of such documents.

Another study which was conducted in Shinyanga by Shijo, revealed that there was delay in payment of the supplier due to the fact that order fulfilment by the supplier was very low such that the facilities had to wait for a full supply to effect payment(29). In Singida, the

reasons for delay in payment were both low order fill rate by the supplier so facilities should wait for a full supply and shortage of funds to pay the supplier.

Interpretation: The results and discussion show that, the extent that the providers fail to pay the supplier on contractual period could also be a reason for the inefficiency in the performance of the supplier to meet the contractual delivery days as well as order fill rate. During the study period it was found that most public health facilities were running shortage of funds for replenishment of the health commodities such they fail to pay the supplier on timely.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1. CONCLUSION

The percentage availability of the health commodities was below the WHO threshold of 80%, which shows that the performance of the prime vendor in meeting the reliable availability of health commodities has insignificant impact.

The Delay in paying the prime vendor on contractual period is among the reason for the inefficiency in the performance of the supplier to meet the contractual delivery days as well as order fill rate.

The capacity of the prime vendor to fulfill the order was significant low to ensure constant availability of the health commodities in the health facilities. The fulfilment rate observed could not suffice the facility's requirements to cater for the people's medication.

The performance of the prime vendor in delivery of the consignment is affected by the rate of payment by the facilities and the transport facilities of the prime vendor. The earlier the facilities pay the PV the earlier the delivery of consignment provided transport facilities are efficiency.

While the performance of Jazia PVS showed no significance in ensuring health commodity availability, but the commitment and integrity of personnel on both sides, the supplier and the purchaser would enhance performance of this system.

5.2. RECOMMENDATIONS

In light of the above conclusion, the author recommends that,

a) The Sectoral ministry should prepare a guideline which stipulates that the number of prime vendors per region should be increased at least to be 2 or 3 with different capacities in supplying health commodities. Those who have more capacity in laboratory commodities should be contracted differently from those with higher capacities in medicine and medical supplies.
b) The local government authority (Singida) should prepare a contract with reduced number of days to deliver the requested order from 14 to 10 days.

c) The local government authority should make sure contracts are made with suppliers who have sufficient transport system to deliver the consignment within the contractual days (Period)
d) The Sectoral ministry and local government authorities should ensure that, Health facilities place orders when they have funds for replenishment of the health commodities and that payment will be made within contractual number of days.
e) I recommend for further research on this topic because the data collected for assessing the performance of prime vendor was one year in order to skip the effect of covid 19, further research should be done prior covid-19 effects.

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H. APPENDICES

ETHICAL APPROVAL

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

Simu Na: +255(026) 2502170
Nukushi: +255(026) 2502078
Barua Pepe: ras@singida.go.tz
Tovuti:http:// www.singida.go.tz

Ofisi ya Mkuu wa Mkoa wa Singida,
Mtaa wa Bomani,
S.L.P 05,
SINGIDA

Unapojibu tafadhali taja:

Kumb Na. BA.381/391/01/ "G"/85.

28 Novemba, 2022.

Mkurugenzi wa Manispaa,
Halmashauri ya Manispaa.
SINGIDA.

Wakurugenzi Watendaji,
Halmashauri za Wilaya,
MKOA WA SINGIDA.

Yah: **KIBALI CHA KUFANYA UTAFITI KUHUSU "ANALYSIS OF THE EFFECTIVENESS OF THE STRATEGIC OUTSOURCING SYSTEM OF JAZIA PRIME VENDOR IN COMPLEMENTING MEDICAL STORES DEPARTMENT IN SINGIDA REGION, TANZANIA."**

Tafadhali husika na mada tajwa hapo juu.

2. Ofisi imepokea barua yenye Kumb. Na. AB.307/223/01 ya tarehe 14 Novemba, 2022 kutoka Ofisi ya Rais – TAMISEMI kuhusu mada tajwa hapo juu.

3. Ofisi ya Rais – TAMISEMI imetoa kibali cha kukusanya taarifa kwa **Bw. Daniel G. Pyuza,** ambaye ni Mwanafunzi wa kitanzania anasoma shahada ya uzamili katika mnyororo wa ugavi wa bidhaa ya Afya (Masters of Health Supply Chain Management) katika Chuo Kikuu cha Rwanda atafanya utafiti katika vituo vya kutolea huduma za Afya Mkoani Singida. Muda wa utafiti huu ni kuanzia mwezi Novemba, 2022 hadi mwezi Desemba, 2022.

4. Kwa barua hii, unaombwa umpe ushirikiano mtafiti huyu ili aweze kukamilisha utafiti tajwa hapo juu kama ilivyokusudiwa.

5. Nakutakia utekelezaji mwema.

M.S. Salum.
Kny: **KATIBU TAWALA WA MKOA.**

Nakala:
Makatibu Tawala wa Wilaya,
Mkoa wa Singida.

Bw. Daniel G. Pyuza, (Mtafiti).

JAMHURI YA MUUNGANO WA TANZANIA

OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

Anuani ya Simu "TAMISEMI" DODOMA
Simu Na: +255 26 2321607
Nukushi: +255 26 2322116
Barua pepe:ps@tamisemi.go.tz
Unapojibu tafadhali taja:-

Mji wa Serikali – Mtumba,
Mtaa wa TAMISEMI,
S.L.P. 1923,
41185 *DODOMA.*

Kumb. Na. AB. 307/223/01 **14/11/2022**

Makatibu Tawala wa Mikoa,
Dar es Salaam, Singida, Mwanza na Geita

YAH: UTAMBULISHO KWA WANAFUNZI WA SHAHADA YA UZAMILI KATIKA UKUSANYAJI WA TAARIFA

Tafadhali husika na somo tajwa hapo juu.

2. OR-TAMSEMI imepokea maombi ya ukusanyaji wa taarifa kutoka kwa wanafunzi wa shahada ya uzamili katika mnyororo wa ugavi wa bidhaa za Afya (*Masters of Health Supply Chain Management*) katika Chuo Kikuu cha Rwanda katika vituo vya kutolea huduma za Afya nchini.

3. Aidha, wanafunzi hao wameandaa "*Research Proposal*" mbalimbali na kuziwasilisha chuoni na kupewa kibali cha kuendelea na ukusanyaji wa taarifa nchini kwa ajili ya kukamilisha research zao. Wafuatao ni wanafunzi ambao wataenda katika maeneo mbalimbali nchini ikiwemo Mkoa wako kwa ajili ya zoezi la kukusanya taarifa.

4. Ninakuomba uwapokee na kuwapa ushirikiano kwakuwa tafiti hizi zitakuwa na michango mkubwa katika nchi hasa katika eneo la mnyororo wa bidhaa za Afya.

a) Ndugu Daniel G Pyuza – Mkoa wa Singida (Halmashauri zote)
b) Ndugu. Green Sadru - Mkoa wa Mwanza, Halmashauri zote
c) Bi. Faith Edmin - Mkoa wa Dar es Salaam (Halmashauri ya Temeke)

5. Ninawashukuru kwa ushirikiano wenu.

Dkt. N. A. Kapologwe
Kny: **KATIBU MKUU**

UNIVERSITY of RWANDA

COLLEGE OF MEDICINE & HEALTH SCIENCES

EAC REGIONAL CENTRE OF EXCELLENCE FOR VACCINES, IMMUNIZATION & HEALTH SUPPLY CHAIN MANAGEMENT

RECOMMENDATION LETTER FOR APPLICATION FOR ETHICAL APPROVAL AND FOR DATA COLLECTION

Information on Dissertation Project

Student name	**DANIEL GEOFFREY PYUZA**	
Student ID	**220019614**	
Project title	**ANALYSIS OF THE EFFECTIVENESS OF THE STRATEGIC OUTSOURCING SYSTEM OF JAZIA PRIME VENDOR IN COMPLEMENTING MEDICAL STORES DEPARTMENT IN SINGIDA REGION, TANZANIA**	
Supervisors: 1. **Prof. Shiferaw Mitiku**		
Contact details of the Student	***Phone*** *+255787 100 374*	***E-mail*** Pyuza15@gmail.com
Degree enrolled in	Master's in Health Supply Chain Management	
Project location	**SINGIDA**	

RECOMMENDATION

This is to certify that Mr. Daniel Geoffrey Pyuza has developed his research proposal (see title above) and presented it to the EAC RCE-VIHSCM Scientific Panel for approval in June 2022. After scientific review and approval by the Research Unit of the EAC RCE-VIHSCM, he is now recommended to submit his research proposal to relevant ethical bodies for ethical approval and to the research site where data collection will be conducted to be able to finish his dissertation in partial fulfilment of the requirements for the award of the Degree of Master's in Health Supply Chain Management.

Any support and cooperation during this process will be highly appreciated.

Dr Stephen KARENGERA
Director
EAC RCE - VIHSCM

1. Data collection Checklist

CHECKLIST

NAME &LEVEL OF HEALTH FACILITY: _____

Number of orders made to Jazia PVS in 2019: _____

1. **PERCENTAGE AVAILABILITY OF SELECTED HEALTH COMMODITIES**

		2017 **Before PVS (%)**				**2019** **After PVS (%)**				**Is there a % increase of health commodities following Jazia Prime Vendor) YES/NO**
FACILITY NAME	**COUNCIL NAME**	**JAN-MARCH**	**APRIL-JUNE**	**JULY-SEPT**	**OCT-NOV**	**JAN-MARCH**	**APRIL-JUNE**	**JULY-SEPT**	**OCT-NOV**	

2. ORDER FILL RATE

PERIOD	Consignment Number (Increase rows if there are more than 2 orders)	Facility Name	Council Name	Did facility procure Outside MSD? (Prime Vendor) ***Y / N***	Number of Items ordered (**A**)	Value of Order Submitted (**B**)	Number of items supplied (**C**)	Value of Order supplied (**D**)	Fill rate per # of Items (C/AX100)	Fill rate per value (D/BX100)	Was the order/items delivered as per the order? (Yes/No)
Jan-March 2019	1										
	2										
April-June 2019	1										
	2										
July-August 2019	1										

	2										
Sept-Dec 2019	1										
	2										

3. ORDER LEAD TIME

PERIOD	Consignment Number (Increase rows if there are more than 2 orders)	Facility Name	Council Name	Did facility procure Outside MSD? (Prime Vendor) ***Y / N***	Date of Order submission (for orders sent during the assessment period) from Council to PV (**A**)	Date consignment was received at council (**B**)	Actual days it took to reach the council (B-A)	Date consignment was received at Facility (C)	Actual days it took to reach the facility (B-C)	Was the Consignment received on time at Council as per contract?

										YES/NO
Jan-March 2019	1									
	2									
April-June 2019	1									
	2									
July-August 2019	1									
	2									
Sept-Dec 2019	1									
	2									

4. ON TIMELY PAYMENT

PERIOD	Consignment Number (Increase rows if there are	Facility Name	Council Name	Did facility procure Outside MSD? (Prime Vendor) ***Y / N***	Date consignment was received at council (**A**)	Date Payment was made **(B)**	Number of days it took to pay the Prime vendor (**B-A**)	Was the Consignment Paid on time as per the contract?
								YES/NO
Jan-March 2019	1							
	2							
April-June 2019	1							
	2							
July-August 2019	1							
	2							

Sept-Dec 2019	1							
	2							

2. Questionnaire

PART 1

Name of the Council _____

Name of the Facility _____

Type of facility_____ **(RRH, DH, HC, DISP)**

Designation of respondent_____

Date _____

PART II

1. Has Jazia Prime Vendor improved the availability of the health commodities in your health facility?
    a. Yes
    b. No
2. What is the average number of days a prime vendor took to deliver consignment to the district?
    a. Within contractual days (1-14)
    b. More than contractual days (>14)
3. Does the Prime vendor fulfill the order per your request?
    a. Yes
    b. No
4. How long does your facility takes to pay the Prime vendor after the delivery of consignment?
    a. Within contractual days
    b. More than contractual days (>21)
5. Do you recommend Jazia Prime Vendor in complementing Medical Stores Department?

a. Yes

b. No

3. Consent form

ANALYSIS OF THE EFFECTIVENESS OF THE STRATEGIC OUTSOURCING SYSTEM (JAZIA PRIME VENDOR) IN COMPLEMENTING MEDICAL STORES DEPARTMENT IN SINGIDA REGION

Introduction

My name is Daniel Pyuza, a researcher from University of Rwanda who is currently working at the Ministry of Health Tanzania. I am conducting research on analysis of the effectiveness of the strategic outsourcing system (Jazia prime vendor) in complementing medical stores department in Singida region. The purpose of this study is to analyse the contribution of Jazia Prime Vendor System on improving the availability of health commodities in Singida Region.

This research will assist the government in determining the efficiency of the Jazia Prime Vendor system in reducing the problem of health-care stockouts in public health facilities. The study will also assist the responsible authorities in improving the Jazia prime vendor system so that it can provide more benefits to improving access to health care products in health facilities.

How to participate in this study

You are asked to participate in this study because you are the incharge of the facility/department which will provide necessary information for the successful completion of this study. If you are willing to participate in this study, you will be required to provide some needed documents for the data collection. The documents include orders sent to Jazia PVS, payment vouchers, Invoices/delivery notes and data from the eLMIS system.

Confidentiality

Everything will remain confidential and will be used only for research purposes.

Risks

I do not expect that any harm will happen to you as a result of participating in the study.

Right to participate in the study

Taking part in this study is completely your choice. You have the right to participate or decide otherwise without giving any reason for your decision. Once you have decided to participate you are also free to terminate your participation at any time.

Benefits of participating in this study

If you agree to participate in this study, you will help us to know the current situation of Jazia Prime Vendor system performance in the region which will provide necessary way forward for the improvement.

Who to contact?

If you have any questions about this study, you are free to contact, the principal investigator, Daniel Pyuza (0787-100374, 0715-971871).

If you agree to this interview, please sign this consent form.

I …… have read and understood the contents of this consent form and my questions have been sufficiently answered. I therefore consent for the interview for this study.

Signature of the interviewee ……..... Date ……

Signature of the interviewer ……....……. Date ……