Tanzania Journal of Health Research
Volume 25, Issue 4, October 2024
https://dx.doi.org/10.4314/thrb.v25i4.15

Understanding Practice and Associated Factors of Implementers on Fidelity Implementation of Prime Vendor System: A Case Study of Tanzania Mainland

Mathew Mganga[1], [2]Stephen Kibusi, [3] Romuald Mbwasi

[1]Presidents' Office, Regional Administration and Local Government – PORALG, [2]University of Dodoma, Dodoma, [3]St. John's University of Tanzania, Dodoma.

Abstract

The practice of Supply Chain Management is an application of the process view, focusing on delivering health commodities to clients and transitioning from functions to processes. The Prime Vendor system has been implemented through the existing institutional structures at various levels of government and funded exclusively by complementary funds. The availability of quality medicines in low-income and middle-income countries is often limited, especially in peripheral health facilities. This study provides a comprehensive understanding of the actual practice and associated factors of implementers on fidelity implementation of the prime vendor system.

Materials and Methods: Data was collected from June to September 2023 using the ODK application from 356 respondents in the Dodoma, Morogoro, Mtwara, and Mwanza regions in Tanzania. They were analysed using SAS version 9.4. Statistical significance was determined at a 95% confidence level."5% confidence level.

Results: In the study, 98.60% of health facility respondents reported procuring health commodities from prime vendors only when they received out-of-stock notifications from the Medical Stores Department. However, 85.67% disagreed with the practice of quarterly procurement. Additionally, 50.56% of respondents agreed they incurred costs upon consignment receipt, and 58.15% disagreed with health facility overseers being responsible for prime vendor preparation. The study revealed that 90.45% of respondents acknowledged the Health Facility Governing Committee/Medicine and Therapeutic Committee's role in approving orders and funds for health commodities procurement through the prime vendor system. Regarding payment timelines, 65.17% of respondents were uncertain about settling invoices within seven days. Most respondents (86.80%) disagreed with using online payment platforms when traditional banking services were unavailable. Furthermore, 88.76% relied on supplementary funds for procurement, while 73.60% disagreed with using in-kind receipts as a source of funds in implementing the prime vendor system. Regarding order submission and delivery, 73.60% did not support health facilities directly submitting their orders to prime vendors, and 56.18% were unaware of the delivery timelines used by the prime vendor to supply various destinations.

Conclusion: The study elucidates the issues surrounding the procurement practices and procedures of health commodities through the prime vendor system, revealing significant variations in implementation fidelity among respondents. Factors influencing implementers' practices underscore the complex interplay between individual characteristics and systemic factors. Addressing these challenges requires targeted interventions, which are essential in enhancing smooth and consistent fidelity in the implementation of the prime vendor system, which will ensure equitable access to health commodities across healthcare facilities.

* **Corresponding author:** Mathew Mganga; matayosemunyu@gmail.com

https://dx.doi.org/10.4314/thrb.v25i4.15

Introduction

The practice of Supply Chain Management in the world applies the process view. (Mentzer et al., 2008) It focuses on dispensing health commodities to clients and from functions to process (MOH, 2017).

In the United Republic of Tanzania, the Local Government Authorities (LGAs) and CHMTs are among the Institutions responsible for budgeting and planning, conducting supportive supervision, and mentoring lower-level health facilities. (MoHCDGEC, 2021) That enhances the implementation fidelity of the prime vendor system.

The practice of the Prime Vendor system shall have been implemented through existing institutional structures embedded in the various government administrative levels and will be financed exclusively by complementary funds. (PORALG, 2022) (Kumurya, 2015)The Tanzania Prime Vendor System National Implementation Manual guides and supports the available institutional structures in day-to-day operations. (Bernstein, 1995).

The availability of quality medicines in low-income and middle-income countries is often limited, especially in peripheral health facilities. (Kuwawenaruwa et al., 2020), and can only be resolved by the complementary practice of the prime vendor system (Mganga et al., 2024).
Despite being knowledgeable, prime vendor system implementers highly accept it (Mganga et al., 2024). (Kuwawenaruwa et al., 2021 and 2020), (Wiedenmayer et al., 2019a) and often perceived it (Mganga et al., 2024) Yet PORALG administrative reports show some notable differences in actual practice across the key PVS actors, leading to shortages and stockouts of health commodities at the facility level. (MoHCDGEC, 2021).

The Medical Stores Department (MSD) was established by Act of Parliament No. 13 of 1993 (MSD, 1993) as an autonomous department under the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) responsible for developing, maintaining and managing an efficient and cost-effective system of procurement, storage, and distribution of approved medicines and medical supplies required for use by all public health facilities (Durand & Paolella, 2013). The challenges of inaccurate bottom-up quantification of health commodities needed at facility levels, a low number of pharmaceutical personnel at the health facility level, and ineffective systems for fulfilling back-ordered items at MSD and prime vendors need immediate interventions to ensure commodities' availability. (Mathew et al., 2013) (Kuwawenaruwa, 2021).

Furthermore, the effectiveness of any activity is influenced mainly by the actual practice of the key implementers involved. (MOH, 2017). While previous studies have not examined the actual/real practice of the Prime Vendor System in Tanzania, this study provides a comprehensive understanding of the actual practice and associated factors of implementers on fidelity implementation of the prime vendor system. (PORALG, 2022).

Materials and Methodology

Study Design

The research adopts a quantitative cross-sectional design, focusing on four regions in Mainland Tanzania: Dodoma, Morogoro, Mtwara, and Mwanza. Within these regions, the study encompasses thirteen diverse local government authorities, including Dodoma (Dodoma City Council, Kondoa District Council, Kongwa District Council), Morogoro (Morogoro Municipal Council, Mvomero District Council, Kilosa District Council), Mtwara (Mtwara District Council, Mtwara Municipal Council, Newala

https://dx.doi.org/10.4314/thrb.v25i4.15

Town Council, Masasi District Council), and Mwanza (Magu District Council, Nyamagana District Council, Ukerewe District Council).

Study Population

The study population consisted of purposively selected members from various levels of health facilities, including in-charges, pharmaceutical personnel/storekeepers, laboratory personnel, and health secretaries directly involved in health commodities' supply chain management system. (Fossey et al., 2002).

Sample Size and Sampling

The sample size for this study was determined using Yamane's formula (1967), which considers the study population, marginal error, and confidence level. With a total study population (N) of 3,203 individuals and a chosen marginal error (e) of 0.05, the calculated sample size (n) is 356. Applying the formula, $n = N/ [1 + N(e)^2]$, the calculated sample size (n) is 356. Regarding sampling strategy, regions were purposively selected based on their relevance to the research objectives, including regions with and without medical store department zonal offices and areas with facilities with high health commodity consumption rates. From these regions, councils were chosen randomly, ensuring the representation of rural and urban settings to capture diverse perspectives. This random selection of councils enhances the study's representativeness. Facilities and individuals were also randomly chosen within these councils, contributing to the inclusivity and generalizability of the study findings. This comprehensive approach ensures that a wide range of experiences and characteristics are represented within the selected regions and councils, thereby improving the validity and reliability of the research outcomes.

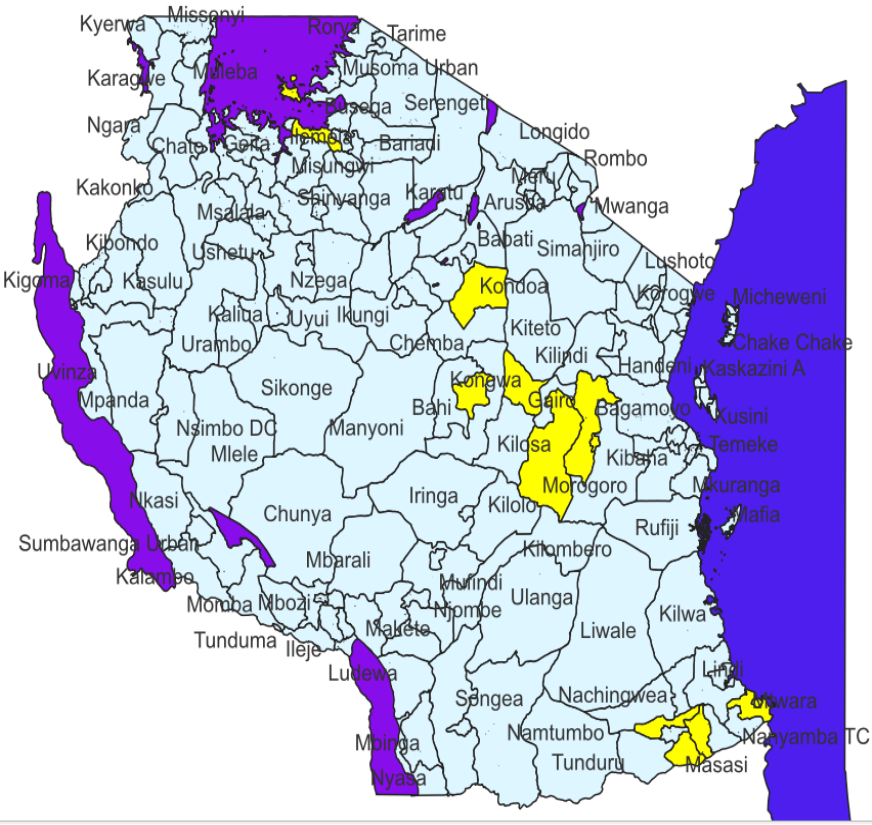
Study Approach

The study deployed a quantitative research approach. Data collection utilised both prospective methods. For the prospective approach, face-to-face interviews were conducted with all respondents using a guided and constructive questionnaire containing both open and closed-ended questions. Structured questionnaires, including open and closed-ended questions, were utilised to gather information from the selected participants. Before data collection, tools were pre-tested at Chamwino District Council Hospital, Mlowa Barabarani Health Center, and Manzase Dispensary to find the tool's reliability and practicability. Informed consent was obtained, and strict confidentiality protocols were followed. Ethical clearance was secured from the Institutional Review Board (IRB) of the University of Dodoma.

Study Area.

Yellow-colored district councils are Dodoma City Council, Kondoa District Council, Kongwa District Council, Morogoro Municipal Council, Mvomero District Council, Kilosa District Council, Mtwara District Council, Mtwara Municipal Council, Newala Town Council, Masasi District Council, Magu District Council, Nyamagana District Council, Ukerewe District Council are areas the research was conducted.

Tanzania Journal of Health Research
Volume 25, Issue 4, October 2024
https://dx.doi.org/10.4314/thrb.v25i4.15



Data collection, and data processing

A face-to-face interview was conducted with all purposefully selected respondents, with a prepared questionnaire. All quantitative data was electronically collected using the ODK application, where data collectors entered the information/data collected directly into the Tablet using the electronic tool. The ODK application allowed online and offline data entry with GPS coding (Hartung et al., 2010).

Dependent variable

The dependent variable of this study (Practice) was obtained from the set of fourteen 14 questions. Each of the questions had a response whether Yes, No, or Don't know. Those questions were divided into four areas which are procurement of health commodities through prime vendors, procurement procedures under the prime vendor system, approval of the orders and payment of health commodities, and lastly submission of orders and delivery of health commodities.

Independent Variables

The independent variables in this study encompass various factors: demographic indicators such as sex, age, and education level; professional attributes such as position within the health facility and years of experience; and contextual elements including the type of health facility, region, and mobility-related factors (such as having been transferred from one working station to another).

https://dx.doi.org/10.4314/thrb.v25i4.15

Data Analysis

The basic descriptive statistics were used to compute and elucidate the respondent's baseline characteristics, including frequency and percentage for categorical variables and mean and standard deviation for non-categorical variables. Since the outcome variable (practice) score demonstrated an approximately normal distribution and is non-categorical, a binary logistic regression model was used to assess factors associated with the practice of implementers on the prime vendor system. The model results are presented in the form of regression parameter estimates and estimated odds ratios (OR). The data analysis was conducted using SAS version 9.4, and the significance of all statistical tests was established at a 5% level of significance (Khademi, 2018).

Ethical Considerations

The University of Dodoma Ethics Committee granted ethical approval and registration for the study. In addition, the Office of the President of the Local Government Regional Administration and the Ministry of Health in the United Republic of Tanzania granted permission for access to all facilities supporting/implementing the Prime Vendor System within the Regional Secretariat and Local Government Authorities as well as four regional referral hospitals (Mwanza, Dodoma, Morogoro, and Mtwara). Finally, informed consent was obtained from respondents during data collection, and confidentiality was maintained throughout the study.

Results

The study was conducted in all four regions Dodoma, Morogoro, Mtwara, and Mwanza. A total of 356 respondents were interviewed from health facilities visited, huge numbers of respondents were from Mwanza (27.81%) and Morogoro (27.81%) followed by Mtwara (26.40%) and with a few participants from Dodoma (17.98%). Figure 1 shows that most respondents are from dispensaries (45.79%) and health centres (39.89%). A smaller percentage of participants were associated with District hospitals (10.67%), and the fewest were from Regional Referral Hospitals (3.65%).

Tanzania Journal of Health Research
Volume 25, Issue 4, October 2024
https://dx.doi.org/10.4314/thrb.v25i4.15

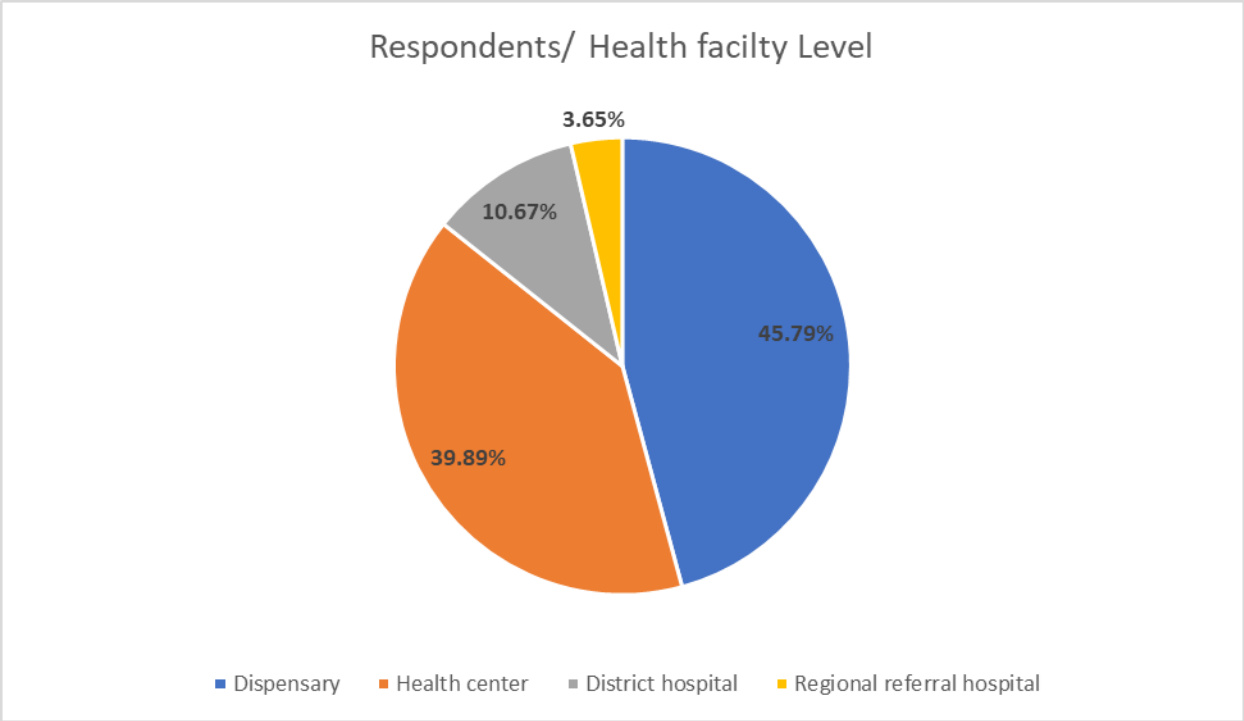


Figure 1: Respondents Interviewed per Health Facility Level

Demographic Results of Respondents

All 356 intended respondents (100% of the sample) participated throughout the data collection process. Notably, a substantial proportion of the participants were females, accounting for 181 (50.84%), while males constituted 175 (49.16%) in the study. Age-wise categorically, the majority of respondents fell within the 30-34 age range, comprising 33.71% of the total. Subsequently, individuals aged 35-39 constituted 20.79%, and those above 45 accounted for 19.10%. In contrast, a smaller % of participants, 8.71%, belonged to the 40-44 age group.

During data collection, we aimed to conduct interviews with the Health Facility in charge, storekeeper, and Laboratory personnel at each health facility. The findings across all visited health facilities revealed that 41.85% were Health Facility In charge, followed by Storekeepers at 32.58%. A smaller percentage, 25.56%, represented Laboratory personnel, as many of the observed dispensaries lacked standard laboratories. From the results, it was noted that most of the respondents had no upper level of education; only 3.37% had a master's degree, 14.61% had a first degree meanwhile, many of them had a diploma 55.06%, and 26.97% of them had a certificate. (See Table 1).

Table 1: Demographic results

Demographic Results			
Variable	**Frequency**	**Percentage (%)**	**Mean ±SD**
Sex			
Male	181	50.84	
Female	175	49.16	

https://dx.doi.org/10.4314/thrb.v25i4.15

Total	**356**	**100.00**	
Age category			36.74±8.33
<30	63	17.70	
30-34	120	33.71	
35-39	74	20.79	
40-44	31	8.71	
45+	68	19.10	
Education level			
Certificate	96	26.97	
Diploma	196	55.06	
Degree	52	14.61	
Master	12	3.37	
Position in this health facility			
Health Facility In charge	149	41.85	
Storekeeper/ Store In - Charge	116	32.58	
Laboratory Personnel	91	25.56	

General Information of Respondents

Table 2 shows that among the interviewed respondents, the majority had experience of 5 – 9 years (40.17%) as Government officials working as health care workers. During their working period, half of the interviewed respondents (59.27%) had transferred from one working station to another, the majority of them transferred once (56.40%) or twice (22.27%), while 40.73% had never transferred to any station since their employment.

Table 2: General Information of respondents Interviewed.

General Information of Respondents			
Variable	**Frequency**	**Percentage (%)**	**Mean ±SD**
Experience			9.72±7.30
<5	66	18.54	
5-9	143	40.17	
10-14	85	23.88	
15+	62	17.42	
Ever transferred from one working station			
No	145	40.73	
Yes	211	59.27	
How many Times? (n=211)			
1	119	56.40	
2	47	22.27	
3	17	8.06	
4	28	13.27	

Throughout the data collection process, the study aimed to assess the practices of implementers on the Prime Vendor system. This study aimed to evaluate implementers' practices within the Prime Vendor system across various domains, including the procurement of health commodities, procurement procedures, order approval, and payments, as well as order submission and delivery processes.

Procurement and procurement procedures of health commodities through prime vendor system

https://dx.doi.org/10.4314/thrb.v25i4.15

According to the study, 98.60% of respondents from health facilities indicated that they procure health commodities from prime vendors upon receiving notifications of out-of-stock items from the medical store department. However, the majority of respondents (85.67%) disagreed with the notion of procuring health commodities from prime vendors quarterly. (PORALG, 2022). Half of the respondents (50.56%) acknowledged incurring some costs upon receiving consignments from prime vendors in their respective regions. Moreover, 58.15% of respondents disagreed that health facility overseers are responsible for prime preparation upon receiving notifications of out-of-stock items from the Medical Store Department. These findings suggest that most respondents were familiar with the procurement procedures associated with prime vendors. (Ruhago et al., 2023).

Variable	Frequency (Percent %)		
	No	Yes	I don't know
Procurement of Health commodities through the prime vendor system			
Health facilities procure Health commodities from the Prime Vendor upon receipt of the Stock (OS) notice of Health commodities from the Medical Store Department (MSD)	2(0.56)	351(98.60)	3(0.84)
Currently, health facilities procure health commodities from prime vendors every quarter.	305(85.67)	30(8.43)	21(5.90)
Incurring any cost for receiving the consignment from the Prime vendor	129(36.24)	180(50.56)	47(13.20)
Procurement Procedures under the Prime Vendor System			
The health facility in charge is responsible for preparing an order of health commodities indicated in the out-of-stock notification from MSD within 14 days	207(58.15)	117(32.87)	32(8.99)

Approval of the orders and payments of health commodities

Most respondents, accounting for 90.45%, agreed with HFGC/MTC's role in approving orders and funding for procuring health commodities through the prime vendor. Furthermore, 62.92% concurred that the council health service board authorizes payment to the prime vendor upon delivering health commodities at the health facility level. (United Republic of Tanzania, 2017).

65.17% of participants were uncertain whether health facilities must settle invoices within seven days of placing an order. Most respondents (86.80%) disagreed with using online payment platforms like Tigopesa and Mpesa when traditional banking systems are unavailable. Moreover, 88.76% of survey participants concurred that health facilities rely on supplementary funds for procurement through the prime vendor system. In comparison, 73.60% expressed disagreement with the utilization of receipts in-kind for procurement within the prime vendor system. (URT, 2009).

Variable	Frequency (Percent %)		
	No	Yes	I don't know
Approval of the order and payments of Health Commodities			
HFGC/ MTC approves orders and funds for the procurement of health commodities to the Prime Vendor	20(5.62)	322(90.45)	14(3.93)
Health facilities are required to pay for the consignment within 7 days of sending the order	84(23.60)	40(11.24)	232(65.17)
When the banking system is not working, health facilities can	309(86.80)	12(3.37)	35(9.83)

https://dx.doi.org/10.4314/thrb.v25i4.15

also make payments to prime vendors online such as TIGO Pesa, M-Pesa			
The Council Health Service Board approves payment for the Prime Vendor after delivery of health commodities at HF level	29(8.15)	224(62.92)	103(28.93)
Health facilities can utilize complementary funds to procure Health Commodities to Prime Vendor System	3(0.84)	316(88.76)	37(10.39)
The Prime Vendor System utilizes the receipt in kind fund for health commodities	262(73.60)	27(7.58)	67(18.82)

Submission of orders and delivery of health commodities

From the study, 73.60% of respondents did not agree that health facilities send their orders directly to the prime vendor after approval by MTC /HFGB and half of the respondents 56.18% were not aware of the agreed time for delivery of health commodities.

Variable	Frequency (Percent %)		
	No	Yes	I don't know
Submission of orders and delivery of Health Commodities			
Health facilities send their orders directly to the Prime Vendor after approval by MTC/HFGB	262(73.60)	63(17.70)	31(8.71)
Delivery lead time of health commodities from Prime vendors is within 21 working days	91(25.56)	65(18.26)	200(56.18)

Factors affecting the practice of implementers on Prime vendor System.

In this section, we wanted to assess factors affecting the practice of implementers on the prime vendor system regarding several variables mentioned below.

Variable	Inadequate	Adequate	Unadjusted analysis		Adjusted analysis	
	n (%)	n (%)	OR [95%CI]	p-value	AOR [95%CI]	p-value
Sex						
Male	81(44.75)	100(55.25)	1.09[0.72, 1.65]	0.6902		
Female	82(46.86)	93(53.14)	ref			
Age category						
<30	25(39.68)	38(60.32)	ref		ref	
30-34	55(45.83)	65(54.17)	0.78[0.42, 1.45]	0.4259	0.72[0.37, 1.43]	0.3507
35-39	34(45.95)	40(54.05)	0.77[0.39, 1.53]	0.4609	0.61[0.28, 1.31]	0.2032
40-44	18(58.06)	13(41.94)	0.48[0.19, 1.14]	0.0951	0.43[0.16, 1.13]	0.0863
45+	31(45.59)	37(54.41)	0.79[0.39, 1.57]	0.4951	0.59[0.27, 1.28]	0.1798
Education level						
Certificate	42(43.75)	54(56.25)	ref		ref	
Diploma	85(43.37)	111(56.63)	1.02[0.62, 1.66]	0.9506	0.68[0.38, 1.21]	0.1934
Degree	33(63.46)	19(36.54)	0.45[0.22, 0.89]	0.0232	0.28[0.12, 0.68]	0.0048
Master	3(25.00)	9(75.00)	2.33[0.59, 9.16]	0.1246	3.01[1.61, 14.88]	0.0475
Position in health facility						
Laboratory	64(55.17)	52(44.83)	ref		ref	
In charge	59(39.60)	90(60.40)	1.88[1.15, 3.07]	0.0120	2.25[1.21, 4.17]	0.0105

https://dx.doi.org/10.4314/thrb.v25i4.15

Storekeeper	40(43.96)	51(56.04)	1.57[0.90, 2.73]	0.1099	1.76[0.95, 3.27]	0.0737
Experience						
<5	29(43.94)	37(56.06)	ref			
5-9	59(41.26)	84(58.74)	1.12[0.62, 2.01]	0.7153		
10-14	45(52.94)	40(47.06)	0.69[0.37, 1.33]	0.2731		
15+	30(48.39)	32(51.61)	0.84[0.42, 1.68]	0.6140		
Type of health facility						
Dispensary	69(42.33)	94(57.67)	ref		ref	
Health center	67(47.18)	75(52.82)	0.82[0.52, 1.29]	0.3953	0.93[0.54, 1.59]	0.7939
District hospital	19(50.00)	19(50.00)	0.73[0.36, 1.49]	0.3919	1.02[0.44, 2.35]	0.9693
RR hospital	8(61.54)	5(38.46)	0.46[0.14, 1.46]	0.1879	0.41[0.09, 1.79]	0.2340
Region						
Dodoma	21(32.81)	43(67.19)	3.02[1.56, 5.83]	0.0010	2.49[1.22, 5.06]	0.0120
Morogoro	44(44.44)	55(55.56)	1.84[1.05, 3.24]	0.0336	1.95[1.04, 3.67]	0.0379
Mtwara	39(41.49)	55(58.51)	2.08[1.17, 3.69]	0.0124	1.65[0.88, 3.08]	0.1173
Mwanza	59(59.60)	40(40.40)	ref		ref	
Ever transferred						
No	72(49.66)	73(50.34)	ref			
Yes	91(43.13)	120(56.87)	1.30[0.85, 1.99]	0.2249		
Knowledge						
Inadequate	84(53.85)	72(46.15)	ref		ref	
Adequate	79(39.50)	121(60.50)	1.79[1.17, 2.73]	0.0072	1.45[1.19, 2.36]	0.0383
Perception						
Negative	78(60.47)	51(39.53)	ref		ref	
Positive	85(37.44)	142(62.56)	2.55[1.64, 3.98]	<.0001	2.56[1.57, 4.17]	0.0002

Discussion

Procurement and Procurement Procedures of Health Commodities through Prime Vendor System:

Most respondents knew the procurement procedures required from the prime vendor system. Specifically, 85.67% of respondents disagreed that procurement is conducted every quarter, noting that they utilize a redesigned eLMIS system instead. Through this system, they typically procure from the Medical Stores Department (MSD) bimonthly, with procurement from prime vendors occurring only when there is an out-of-stock notification from MSD after the primary procurement.

All consignments from prime vendors must be delivered to the district hospital. This arrangement causes some health facilities to incur additional costs for picking up consignments from the district hospital or selected health facilities. In contrast, facilities near the highway to the district hospital benefit from direct deliveries. Some councils have a budget allocation for distributing consignments to health facilities, resulting in no additional costs. This variability creates different responses based on several factors.

In dispensaries and health centres, the absence of pharmaceutical personnel means that tasks such as procuring from medical stores and prime vendors often fall to a designated member of the health facility in charge, who acts as the pharmaceutical personnel. This situation partly explains why 58.15% of respondents disagreed, while 32.87% agreed that health facility staff are responsible for preparing orders of health commodities upon receiving an out-of-stock notification from MSD.

The findings are consistent with other studies on the prime vendor system. For instance, the Jazia Prime Vendor System (PVS) in Tanzania has demonstrated improvements in the availability of

https://dx.doi.org/10.4314/thrb.v25i4.15

health commodities, yet challenges persist in order fill rates and delivery lead times. Training and transparent standard operating procedures (SOPs) are crucial for the effective implementation and operation of the PVS. (Wiedenmayer et al., 2019b) (Pyuza et al., 2023) (Mganga et al., 2024)

Approval of the orders and payments of health commodities:

The study observed that all implementers interviewed knew the procurement procedures necessary when procuring health commodities from a prime vendor. This included Council Health Management Team (CHMT) members, where the district pharmacist and laboratory technologist supervise all prime vendor activities at the council level. The approval of procurement to prime vendors is overseen by the Medical Therapeutic Committee (MTC) or the Health Facility Governing Committee (HFGC). This operational protocol was confirmed by examining meeting minutes from HFGC/MTC sessions held at the visited health facilities. Various challenges were noted despite the conduct of these meetings, including inconsistent participation from committee members, the absence of standardized procurement documentation for prime vendors, and the lack of meeting minutes in the invoices issued by prime vendors to some health facilities.

During data collection, it was noted that a significant portion of procurements from prime vendors occur following notifications of out-of-stock items from the medical store. Approval of orders by the MTC/HFGC within health facilities is contingent upon the urgent need for out-of-stock health commodities from the Medical Store Department and the available funds for payment. Most respondents (73.60%) indicated that receipts in-kind are not employed in prime vendor procurements, while 88.76% reported using complementary funds by health facilities for procurement from prime vendors. Additionally, all payments were observed via the banking system, with prime vendors receiving payments through bank checks. However, many implementers, including prime vendors, expressed dissatisfaction with this method due to lengthy approval procedures at the council level, rejection of bank checks by banks, and insufficient knowledge among some implementers regarding the process of using bank check slips.

Similar findings have been reported in other studies investigating the implementation and challenges of the prime vendor system in Tanzania. For example, the performance evaluation of the Jazia Prime Vendor System highlighted issues such as inconsistent order fill rates and delayed delivery times, which impact the availability of health commodities at the facility level. (Pyuza et al., 2023). A study on the Jazia Prime Vendor System by USAID also noted that while the system improved the availability of medicines, challenges such as the complexity of financial transactions and approval procedures remain significant hurdles.

Moreover, research published in the Tanzania Journal of Health Research identified similar challenges in implementing the prime vendor system, including the need for better training of health facility staff, standardized documentation, and streamlined financial processes to enhance the efficiency and reliability of the supply chain. (Mganga et al., 2024). These studies underscore the necessity of addressing procedural and systemic issues to optimize the procurement and supply of health commodities in Tanzania.

Recommendations

Since the study did not examine whether regional Prime Vendors have storage warehouses for specific regions, it is recommended that further studies be conducted to focus on storage and

improve the best practices for health commodities and Regulatory Authority practices after starting implementation compared to during due diligence.

Conclusion

In conclusion, the study sheds light on health commodities' procurement and procurement procedures through the prime vendor system, revealing a variation in practice among most respondents. Challenges arise concerning the delivery of consignments, with varying costs incurred by different health facilities based on their proximity to health facilities. Moreover, Factors influencing the practices of implementers, such as education level, position in health facilities, regional differences, knowledge, and perception, highlight the complex interplay between individual characteristics and systemic factors. Addressing these challenges necessitates targeted interventions to enhance procurement efficiency and ensure equitable access to health commodities across healthcare facilities.

Acknowledgements

Special thanks are sent to Dr Stephen Kibusi, Dr Romuald Mbwasi, and Edom Silabi for their contributions to the meticulous review of this work and their technical guidance throughout the manuscript preparation for publication.

Authors contributions

MM developed the proposal and study design and participated in planning, data collection, and interpretation. MM was the principal investigator in all four regions visited and supervised the data collection process. MM contributed to the training and managing data collection, and SK supported planning and organizing logistics. MM drafted the manuscript for input by the other authors. All authors read and approved the final manuscript.

Competing interests

None.

Reference

Bernstein, E. R. (1995). Dynamics and photochemistry of neutral Van Der Waals clusters. *Annual Review of Physical Chemistry*, *46*(1), 197–222. https://doi.org/10.1146/annurev.pc.46.100195.001213

Durand, R., & Paolella, L. (2013). Category stretching: Reorienting research on categories in strategy, entrepreneurship, and organization theory. *Journal of Management Studies*, *50*(6), 1100–1123. https://doi.org/10.1111/j.1467-6486.2011.01039.x

Fossey, E., Harvey, C., Mcdermott, F., & Davidson, L. (2002). Understanding and evaluating qualitative research Australian and New Zealand Journal of Psychiatry. *Journal of Psychiatry*, 717–732.

Greenwood, R., Oliver, C., Lawrence, T. B., & Thomas, B. (2018). *ePub WU Institutional Repository Introduction : Into the Fourth Decade* (Issue March).

Hartung, C., Anokwa, Y., Brunette, W., Lerer, A., Tseng, C., & Borriello, G. (2010). Open data kit: Tools to build information services for developing regions. *ACM International Conference Proceeding Series*. https://doi.org/10.1145/2369220.2369236

Khademi, A. (2018). Complex Survey Data Analysis with SAS . *Journal of*

Statistical Software, *84*(Book Review 2). https://doi.org/10.18637/jss.v084.b02

Kumurya, A. S. (2015). Supply Chain Management of Health Commodities and Logistics: Fundamental Components of Booming Medical Laboratory Services. *European Journal of Logistics*, *3*(4), 62–72.

Kuwawenaruwa, A. (2021). *The effects of Jazia prime vendor system in complementing the existing pharmaceutical supply chain across public healthcare facilities in Tanzania*. 215.

Kuwawenaruwa, A., Tediosi, F., Metta, E., Obrist, B., & Wiedenmayer, K. (2021). *Original Article Acceptability of a Prime Vendor System in Public Healthcare Facilities in Tanzania*. *10*(10), 625–637. https://doi.org/10.34172/ijhpm.2020.90

Kuwawenaruwa, A., Wyss, K., Wiedenmayer, K., & Tediosi, F. (2020). Cost and cost drivers associated with setting-up a prime vendor system to complement the national medicines supply chain in Tanzania. *BMJ Global Health*, *5*(9), e002681. https://doi.org/10.1136/bmjgh-2020-002681

Mathew, J., John, J., Kumar, S., & Management, O. (2013). New Trends in Healthcare Supply chain. *2013 POM 24th Annual Confrence of the Production and Operations Management*, 1–10.

Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). Supply Chain Management and Its Relationship To Logistics, Marketing, Production, and Operations Management. *Journal of Business Logistics*, *29*(1), 31–46. https://doi.org/10.1002/j.2158-1592.2008.tb00067.x

Mganga, M., Kibusi, S., & Mbwasi, R. (2024). *Understanding Implementers ' Perceptions on the Prime Vendor System : A Case Study of Tanzania Mainland*. *25*(3), 1184–1197.

MOH. (2017). *the United Republic of Tanzania Standard Treatment Guidelines & National Essential Medicines List*. *December*, 468.

MoHCDGEC. (2021). *Tanzania Health Sector Strategic Plan 2021-2026*. *2026*(July), 104.

MSD. (1993). *Medical Store Department Act* (pp. 1–13).

Negera, G., Merga, H., & Gudeta, T. (2021). Health professionals' perception of pharmaceuticals procurement performance in public health facilities in Southwestern Ethiopia. *Journal of Pharmaceutical Policy and Practice*, *14*(1), 1–10. https://doi.org/10.1186/s40545-021-00344-5

Organization, W. H. (2014). Warning: This Report Is Out-of-Date. in Particular, Entire Time-Series of Tb Disease Burden Estimates Are Updated Every Year. for the Latest Data and Analysis, Please See the Most Recent Edition of the Global Tb Report. *Global Tuberculosis Report*, 171. http://apps.who.int/bookorders.%0Afile:///D:/DST Proposal work_progess/Thesis writing/Ref of all chapt ofThesis/2.9 WHO TB 2011.pdf

PORALG. (2022). *PRIME VENDOR SYSTEM IMPLEMENTATION MANUAL*. *1*(45), 3–6.

Pyuza, D., Mitiku, S., Swalehe, O., Kagisha, V., & Njunwa, K. J. (2023). Performance of Jazia Prime Vendor System in ensuring availability of health commodities in Singida Region, Tanzania: a pre- and post-evaluation study. *Journal of Pharmaceutical Policy and Practice*, *16*(1), 1–9. https://doi.org/10.1186/s40545-023-00660-y

Rivard-Royer, H., Landry, S., & Beaulieu, M. (2002). Hybrid stockless: A case study. Lessons for health-care supply chain integration. *International Journal of Operations and Production Management*, *22*(4), 412–424. https://doi.org/10.1108/01443570210420412

Ruhago, G. M., John, M. B., Ngalesoni, F. N., Msasi, D., Kapologwe, N., Kengia, J. T., Bukundi, E., Ndakidemi, R., & Tukai, M. A. (2023). Understanding the implication of direct health facility financing on health commodities availability in Tanzania. *PLOS Global Public Health*, *3*(5), 1–11. https://doi.org/10.1371/journal.pgph.0001867

United Republic of Tanzania. (2017). *Direct Health Facility Financing Guide*. 1–28.

URT. (2009). National Public Private Partnership (PPP) Policy. *Prime Minister's Office*, 1–16.

https://dx.doi.org/10.4314/thrb.v25i4.15

Wiedenmayer, K., Mbwasi, R., Mfuko, W., Mpuya, E., Charles, J., Chilunda, F., Mbepera, D., & Kapologwe, N. (2019a). Jazia prime vendor system- A public-private partnership to improve medicine availability in Tanzania: From pilot to scale. *Journal of Pharmaceutical Policy and Practice*, *12*(1), 1–10. https://doi.org/10.1186/s40545-019-0163-4

Wiedenmayer, K., Mbwasi, R., Mfuko, W., Mpuya, E., Charles, J., Chilunda, F., Mbepera, D., & Kapologwe, N. (2019b). Jazia prime vendor system- A public-private partnership to improve medicine availability in Tanzania: From pilot to scale. *Journal of Pharmaceutical Policy and Practice*, *12*(1). https://doi.org/10.1186/s40545-019-0163-4