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Fiscal Decentralisation and Public Health Service Delivery Outcomes: Evidences from Igunga and Kaliua Local Government Authorities in Tanzania

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ABSTRACT: Rural local government authorities (LGAs) in Tanzania are facing challenges in Health Service Delivery characterized with low financing, uneven distribution of skilled medical professionals and high turnover, limiting the responsiveness and quality of healthcare available to the rural populations. In response to this, the study investigated the influence of Fiscal Decentralisation (FD) on Public Health Service Delivery (PHSD) outcomes in two LGAs of Tabora region. The study employed a mixed-methods approach with an analytical cross-sectional design. Quantitative data was collected from 385 health service users selected via multistage sampling and proportionately distributed between study LGAs for survey, while qualitative data was collected from ten interviews with Council Health Management Team (CHMT) members and two Heads of Planning and Coordination Divisions. Quantitative data were analysed using a Linear Mixed Model (LMM), Simple Linear Regression (SLR) followed by the analysis of variance (ANOVA). The findings reveal that FD has a positive significant influence ($\chi^2 = 25.72$,

$p < 0.001$) on PHSD outcomes in Igunga and Kaliua LGAs, with notable variation between wards. Locally generated revenue emerged as the most significant determinant, accounting for 35.2% of service delivery variation. ANOVA results confirm disparities in both locally generated revenue and PHSD performance across locations. While FD via local revenue boosts PHSD outcomes, differences in resources allocation and limitations in administrative capacity reduce its effectiveness. The study recommends for capacity-building strategies, improved local revenue generation, equitable resources allocation, and provision of incentives for health workforce retention to maximise FD's impact on PHSD outcomes in Tanzania.

Keywords: *Fiscal Decentralisation, Public Health Service Delivery Outcomes, Healthcare Human Capital Capacity, Local Government Authorities*

1.0 Introduction

In the past two decades, fiscal decentralisation (FD) has gained importance as a key aspect of local government reform across low- and middle-income countries (LMICs), with its potential in boosting the efficiency and effectiveness of public service delivery (Boex *et al*., 2023; Dick-Sagoe, 2020). It encompasses the transfer of financial authority and responsibility from the central government to local government authorities (LGAs), being predicted that decentralising fiscal resources leads to improved LGAs' service delivery, as it aligns resources allocation with local communities' priorities and improving accountability (Bossert, 1998; Rotulo *et al*., 2022). Specifically in the public health sector, FD has been noted in creating space for context-based planning, highly responsive to local communities' specific health needs and more equitable allocation of public health resources (Kigume and Maluka, 2019; Kigume *et al*., 2018; Nuevo *et al*., 2022).

Decentralisation of the public health service delivery in Tanzania, particularly in rural LGAs such as Igunga and Kaliua, has been the core component of the Local Government Reform Programme I and II, aiming at improving availability, accessibility and equity in health services (Sarwatt *et al*., 2025; Kamugisha and Mchome, 2024; Kitole *et al*., 2023; Kigume *et al.*, 2018; Lufunyo, 2017). The two LGAs (Igunga and Kaliua) many other rural Tanzanian LGAs, are characterised by

the widespread nature of poverty, limited health infrastructure, a high shortage of healthcare human resources and overreliance on central government transfers for their budget execution (Tungu *et al*., 2025; Kapologwe *et al*., 2024). Despite Tanzania's national policy and efforts to enhance fiscal autonomy and service responsiveness at the local level, most rural LGAs continue to suffer from persistent disparities in health outcomes compared with their urban counterparts. Most of the observed persistent challenges include poor maternal and child health indicators, inadequate staffing, and inequitable access to essential medicines and medical supplies (MoH, IHI and The Global Fund, 2024;URT, 2024; Dougherty *et al.,* 2022; Rotulo *et al*., 2022).

Fiscal decentralisation status in rural Tanzanian LGAs presents a complex reality; while fiscal responsibilities have been devolved, their execution is obstructed by factors such as low institutional capacity, low revenue generation and unpredictable intergovernmental transfers (Likwelile and Assey, 2023; Binyaruka and Borghi, 2022). Public health service delivery (PHSD) in Tanzania's LGAs involves a network of primary healthcare facilities, including dispensaries, health centres, and district hospitals. These facilities are responsible for providing a range of essential health services, such as maternal and child health care, immunisations, disease prevention, and the treatment of common illnesses (Msacky, 2024). Likewise, these LGAs have been facing challenges in their healthcare human capital, such as poor distribution of skilled medical professionals and high turnover, that limit the responsiveness and quality of healthcare available to the rural populations Kamugisha and Mchome, 2024; Kitole *et al*., 2023). Thus, in this study Igunga and Kaliua LGAs represent the country's critical cases for analysing how FD influences PHSD outcomes under the prevailing institutional and geographical limitations.

While FD has been observed to lead to improved PHSD, its effectiveness is not automatic. Its effectiveness has been influenced by a number of contextual and moderating factors, such as LGA's capacity in managing decentralised resources, how strong the accountability mechanisms in place are, the local governance structure and the availability of qualified healthcare human capital (Rotulo *et al*., 2022; Kigume and Maluka, 2019). In the real sense, effective FD effects are often

realised in contexts where LGAs have both decision-making autonomy and the institutional capacity to plan and allocate, recruit healthcare personnel and monitor service delivery (Ruan *et al.,* 2021). Moreover, the local governance quality, certainty and transparency in intergovernmental transfers and clear demarcation of roles between the central and local governments play a crucial role in shaping the extent to which FD translates into better PHSD outcomes (Dick-Sagoe, 2020).

However, most of the empirical studies conducted in the Tanzanian context have limited empirical examination on moderating role of local healthcare human capital capacity, they have either narrowly focused on FD indicators such as revenue collection and budget execution rates (Kamugisha and Mchome, 2024; Ruan *et al.*, 2024; Kitole *et al.,* 2023; Likwelile and Assey, 2023) monolithically without directly linking them to PHSD outcomes, also without considering the dynamic interaction between FD and factors such as healthcare human capital capacity in terms of distribution, training, experience and turnover, and how these factors moderates the relationship between FD and PHSD outcomes in LGAs. Moreover, previous studies rarely accounted for geographical and administrative differences despite their significant role in shaping FD influence on PHSD outcomes across LGAs. These oversights have limited our understanding of why FD yields different outcomes in different contexts particularly in rural and resource-constrained LGAs.

This study addresses the existing gaps by employing more intensive, context-specific analysis of two rural LGAs, namely Igunga and Kaliua, guided by the Bossert Decision Space Framework and Principal Agent Theory. Therefore, the study aimed at assessing the influence of FD under its dimensions namely, locally generated revenue, expenditure responsibility assignment and intergovernmental transfers (LGR, ERA and IGT), on PHSD outcomes, measured in terms of availability, affordability, accessibility, quality and responsiveness of services. Specifically, assessed FD and PHSD outcomes by comparing the difference in mean scores of PHSD performance across locations, and contextually assessed the moderating role of healthcare human capital capacity on FD effects on PHSD outcomes. By investigating those aspects, the study sought to provide context-based evidences to

guide policy formulation and review, as well as necessary reforms for more effective decentralised PHSD.

The rest sections of this paper present literature review, methodology, findings and discussions, while the final section presents the conclusion, theoretical and policy implications.

2.0 Theoretical underpinnings

2.1 The Bossert Decision Space Framework

The study employs Bossert Decision Space Framework pioneered by Thomas Bossert in 1998 as a conceptual model used to analyse and comprehend the degree of decision-making power (decision space) granted to LGAs as the actors in a decentralised public healthcare. The Framework posits that decentralisation should be analysed as the range of choices (decision space) across key healthcare system functions such as financing, personnel management and organisation of service delivery, while allowing for the examination of the LGA's level of autonomy over fiscal resources generation and allocation, staffing recruitment an allocation and procurement of medical supplies (Chen *et al*., 2021; Liwanag and Wyss, 2019; Roman *et al.*, 2017). It assumes that the effectiveness of decentralisation depends not only on the local autonomy, but also on the LGAs' capacity to manage their assigned responsibilities while remaining accountable to both Central health provision institutions and local communities.

Various scholars have employed the framework to demonstrate how the level of decision space exercised by lower-level governments resources allocation and the responsiveness of decentralised health services to local communities' needs (Maluka and Kigume, 2019; Sumah and Baatiema, 2019; Marchildon and Bossert, 2018). Tanzanian LGAs' decision space has been spotted being constrained by a limited fiscal autonomy and low administrative capacity especially in rural settings. Thus, the framework is suitable for this study in examining FD dimensions (LGR, ERA and IGT) and how they link to PHSD outcomes. However, the Framework primarily focuses on the allocation and control of resources within the decentralised health system, thus, it does not provide a clear understanding of the complex relations,

motives, and actions of various players involved in decentralised healthcare provision. To address this weakness, principal-agent theory was introduced

2.2 Principal-Agent Theory

The Principal-Agent Theory (PAT) was originally developed by Michael Jensen (1952), later modified by William Meckling (1976) and Sarens *et al.* (2012) and was expanded by Mohammadi (2010). Complementing the PAT explores the dynamic relationship between principals, in this case, the central government, and their agents, in this case, LGAs and how they interact to achieve desired outcomes (Okidi and Abal, 2021). In the decentralised governance, the central government delegates certain responsibilities and decision-making powers as well as resources management entrusting them to effectively deliver health services at the local level.

The theory assumes the existence of conflicting goals, that is, differing priorities, information asymmetry and weak monitoring together often leads to misaligned goals between the principals and the agents. Whereby, the agents (LGAs) being closer to the citizens possess more information about the local community's condition and capacity than the principal, thus posing monitoring challenges if they decide to act irrational. This theory calls for the need of instituting appropriate incentives and monitoring mechanisms, as well as strong accountability instruments in place, such as performance contracts and audits, to better align agents' actions with the principal's objectives.

Thus, the integration of the Bossert Decision Space Framework and PAT provides a comprehensive means for understanding the facts into why LGAs may fail to achieve the intended PHSD outcomes despite FD, particularly under weak institutional capacity and varying geographical context.

2.3. Empirical review and Hypotheses development

2.3.1 Fiscal Decentralisation and Public Health Service Delivery Outcomes

Fiscal decentralisation (FD) is globally regarded as potential driver of improved public service delivery, including in the health sector. Numerous studies conducted in diverse contexts suggest that FD enables LGAs to make context driven decision

regarding financial and human resources allocation, thereby aligning the provided health services to communities' specific needs (Charles *et al*., 2025; Hagedorn *et al*., 2025; Dougherty *et al*., 2022; Rotulo *et a*l., 2022). In public health systems, FD is often linked with improved access, equity, affordability and accountability, provided that LGAs autonomy is matched with robust institutional and administrative capacity (Jalil *et a*l., 2025; Ruan *et al*., 2024; Nakatani *et al*., 2023; Xu and Lin, 2022).

Empirical evidence from African countries reveals similar trends. Whereby, in Ethiopia and Ghana, decentralised health resources budgeting has led to increased targeted maternal and child health interventions and improved immunisation coverage (Charles *et al*., 2025; Otoo and Danquah, 2021). Studies from Nigeria and Zimbabwe revealed that LGAs with greater fiscal autonomy had better health infrastructure coverage compared to those with limited fiscal autonomy (Edame *et al*., 2023; Zinyama, 2021). However, challenges persist, whereby in Uganda inefficiencies in fund allocation and disbursement reduces service quality (Kyohairwe and Agatre, 2023), while in Kenya, FD's benefits depended highly on financial governance quality (Masaviru *et al.,* 2021). Other studies reported more mixed or negative outcomes, for instance in Cameroon, FD improved education infrastructure (classrooms and desks per pupil) but reduced public hospitals coverage and quality (Djiogap *et al*., 2024), similarly in Kenya, affordability of healthcare remained questionable due to corruption and weak legal (Mwangi *et al.*, 2023). On the other end, Malawian and South African LGAs' limited revenue autonomy and high dependence on intergovernmental transfers reduced FD's expected benefits for healthcare and infrastructure development

In Malawi and South Africa, FD's impact on PHSD mixed due to limited revenue generation autonomy and over reliance on intergovernmental transfers, which limits expected fiscal decentralisation benefits and underfunded healthcare and health infrastructure development (Naluso and Kanyangela, 2024; Rodriguez *et al*., 2023; Malakoane *et al*., 2020).

Most studies conducted in the Tanzanian context have examined the impact of FD on PHSD, focusing on FD indicators such as own-source revenue generation, intergovernmental transfers and expenditure responsibility assignment (Kamugisha

and Mchome, 2024; Kitole *et al*., 2023; Kigume *et al*., 2018). However, few have explored how contextual factors such as geographical disparities and the moderating effect of healthcare human capital capacity in assessing FD's effects on PHSD outcomes. This study not only assessed the influence of FD in its three aspects on PHSD outcomes but also addressed this gap by integrating both quantitative and qualitative contextual evidences. To undertake that assessment, the following null hypotheses were formulated and tested:

> ***H_{01}:*** *There is no significant influence of fiscal decentralisation (FD) on the performance of public health service delivery (PHSD) in LGAs.*
>
> ***H_{01}a:*** *There are no significant differences in mean scores of LGR across different locations.*
>
> ***H_{01}b:*** *There are no significant differences in mean scores of PHSD performance across different locations within the studied LGAs.*

The moderating role of Healthcare Human Capital Capacity on FD and PHSD Outcomes

Globally, local healthcare human capital capacity measured in terms of staff size, composition, education, and turnover rate plays a crucial moderating role in the relationship between FD and PHSD in terms of accessibility, availability, quality, affordability and responsiveness, particularly in rural LGAs (Charles *et al*., 2025; Anghel and Almășan; 2024; Juma *et al*., 2023; Rotulo *et al*., 2022; Okoroafor *et al*., 2021; Chege *et al*., 2020). Whereby, in Kenya rural setting healthcare human capacity has been found to explain almost half (47.6%) of the variance in PHSD, highlighting its central moderating role of the effects of FD (Juma *et al*., 2023). In LGAs with a sufficient number of skilled medical personnel across various cadres, FD has been evidenced to improved PHSD outcomes. Contrarily, in contexts where skilled medical staff are insufficient, unevenly distributed or affected by high turnover, FD's effectiveness is undermined leaving LGAs struggling to deliver quality healthcare services and resulting in disparities in access, responsiveness and overall healthcare quality (Charles *et al*., 2025; Rotulo *et al.,* 2022; Xu and Lin, 2022; World Bank, 2021).

Studies conducted in Tanzania highlight that health workers' motivation, distribution and training strongly influence how effectively decentralised fiscal resources translate into better services (Maluka and Kigume, 2019; Likwelile and Assey, 2023). Despite the positive findings, numerous studies conducted in Tanzania have focused on the impact of devolved fiscal inputs only overlooking the moderating role of human capital and without considering LGAs' absorption and operating capacity. Thus, this study, taking Igunga and Kaliua as case studies examined the moderating role of healthcare human capital capacity in enhancing the influence of FD on PHSD outcomes by testing the following null hypothesis:

> ***H02:*** *Healthcare human capital capacity does not significantly moderate the relationship between fiscal decentralisation and public health service delivery outcomes in LGAs.*

2.4 Conceptual Framework

The conceptual framework diagrammatically explains the influence of FD on PHSD outcomes and the role played by the moderating variable healthcare human capital capacity in LGAs' healthcare system. Fiscal decentralisation (FD), indicated by the locally generated revenue (LGR), expenditure responsibility assignment, and intergovernmental transfers, through enhancing healthcare human resource capacity, can directly or indirectly influence PHSD outcomes. Numerous studies affirm that FD enhances the delivery of public services where fiscal autonomy is complemented with local administrative and technical capacity (Mwangi et al., 2023; Otoo and Danquah, 2021). For example, in Uganda and Kenya, FD has led to improved responsiveness and resource allocation in health sectors at the county level (Mwangi et al., 2023). Nevertheless, weak financial control or capacity in local governments can reduce these effects (Likwelile and Assey, 2023). The dependent variable, PHSD outcomes, encompasses measurable indicators such as the quality, accessibility, availability, affordability, and responsiveness of health services provided by LGAs to the local community (Kimutai, 2022; Masaviru *et al.,* 2021; Lufunyo, 2017). These indicators also align with the study of Mwangi *et al.* (2023), who posit that FD influences affordability and accessibility, among other indicators of public services.

Health human capital capacity, which includes the availability (size and composition), education level (skills), training and development (capacity building), staff experience, staff turnover, and motivation, moderates the relationship between FD and PHSD outcomes by influencing the extent to which FD can drive improvements in PHSD outcomes (Chege *et al.*, 2020; Kigume *et al.,* 2018; Lufunyo, 2017). Although LGAs can be granted financial resources and decision-making autonomy, inadequate human capital can constrain the realisation of improved PHSD (Kigume and Maluka, 2019). Moreover, the influence of FD on PHSD varies significantly across decentralised local settings (Nakatani *et al*., 2023; Lufunyo, 2017). Similarly, Sapkota *et al.* (2023) argue that the effectiveness of health governance and financing structures significantly influences the decentralised health delivery outcomes. Thus, **Figure 1** summarises the conceptual framework that depicts the study's variables' causal-effect relationships.

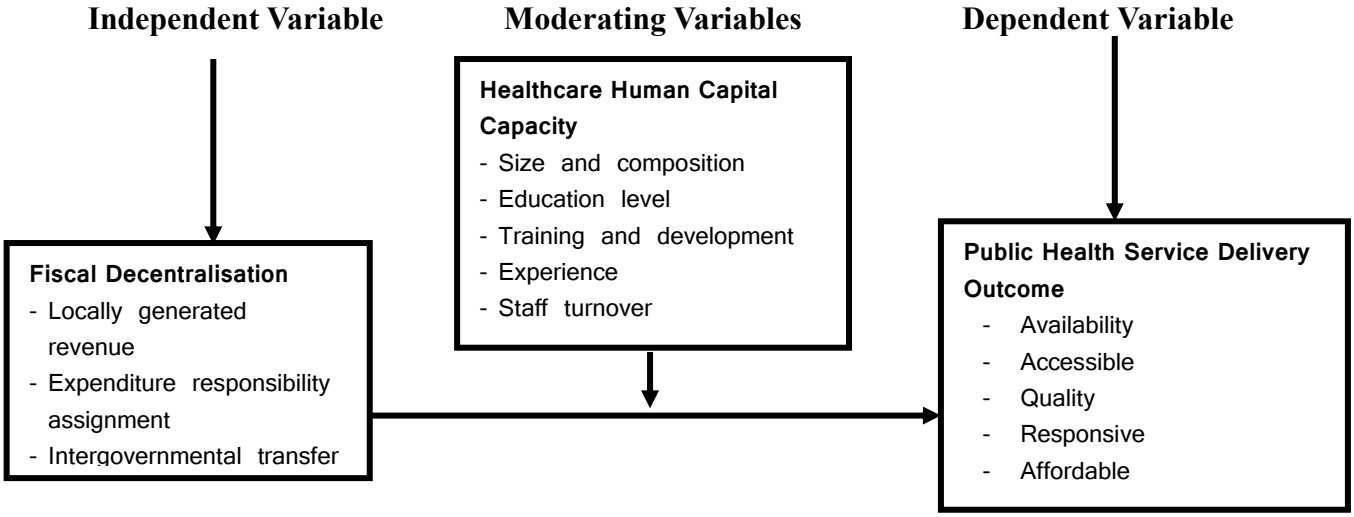

Figure 1: Conceptual Framework
Source: Authors own construction based on Literature Review (2025)

3.0 Methodology

3.1 Research approach and design

The study adopted the mixed methods approach to integrate quantitative performance metrics with qualitative insights on decentralised PHSD (Kesale *et al*., 2023; Maket and Naibei, 2025). The analytical cross-sectional study design to capture the study's

key performance indicator in assessing the association between FD and PHSD outcomes. Quantitative data were obtained from health service users on FD and PHSD performance metrics, while qualitative data came from in-depth interviews with nine Council Health Management Team members, the Head of Planning and Coordination Division from each LGA, and a review of related reports.

3.2 Study area, design, sample size, Sampling technique, data and data collection

The study was conducted in Kaliua and Igunga District Councils, which are among the rural LGAs in the Tabora region of Tanzania. The Tabora region was purposefully selected due to its prolonged health disparities and decentralisation related governance challenges, particularly in rural areas' health service delivery. The region has been highlighted in the National health report (URT, 2024) exhibiting higher childhood mortality rates and inconsistent health system performance, making it a relevant local setting justifiable for assessing the effects of FD on PHSD. Kaliua and Igunga DCs have been selected for this study because, according to the National Bureau of Statistics and the Office of the Chief Government Statistician (NBS and OCGS, 2023), have recorded high neonatal and under-five deaths over ten years (2012-2022), with 27 deaths per 1,000 live births, and under-five mortality rates were 52 deaths per 1,000 children, both exceeding the national averages of 24 and 43 for neonatal mortality and under-five mortality, respectively. Thus, these figures underscore the fact that the two LGAs face critical public health challenges, making them suitable as case studies assessing the effects of FD on PHSD in rural LGA contexts.

A study sample of 385 health serves users was computed using the Cochran's (1977) formula for a finite population ensures statistical reliability with a 5% margin of error (e).

$$n = \left(\frac{Z^2{}_{1-\frac{\alpha}{2}}\, P(1-P)}{d^2} \right)$$

n = required sample size, $Z_{1-\alpha/2}$ = 1.96 (Z-value corresponding to 5% level of significance, α, p = estimated proportion of the population satisfied with health

services delivered by the LGAs. The estimated proportion = 0.5 since there is no prior information on satisfaction with delivered health service.

1-p = estimated proportion of the population not satisfied with health services delivered by the LGAs, d = desired margin of error (d = 5% for this study). Then:

$$n = \left(\frac{1.96^2 0.5(1.05)}{0.05^2}\right) \approx 385$$

The computed sample size (n) of 385 health service users was proportionally distributed using the formula below (Cochran's 1977):

$n_i = \left(\frac{N_i}{N}\right) \times n$ Where: n_i is the sample size from LGA$_i$, N_i is the population size of LGA$_i$, LGA$_i$, N is the total population size for all selected LGAs (N = 1,224,687), and n is the desired overall sample size (n = 385)

Table 1: Distribution of sample size for Health Services Users by LGA

LGA	**Facilities type**		**Population**	**Population Proportion**	**Sample**
	Health Centres	**Dispensaries**			
Igunga DC	Nanga Ziba	Bulumbela, Igogo, Mbutu, Ndembezi	546,240	0.45	173
Kaliua DC	Kaliua HC Ulyankulu HC	Igagala, King'wangoko, Maboha, Uyowa	678,447	0.55	212
Total	**4**	**8**	**1,224,687**	**1**	**385**

Source for population: *NBS, 2022*

The study employed a four-stage, multistage sampling technique: *first,* it purposefully selected the Tabora region based on its health disparities as well as decentralisation challenges; *second,* it used simple random selection to choose Kaliua and Igunga DCs for capturing rural health governance variability. *Third,* randomly selected six health facilities (two health centres and four dispensaries) from each LGA; and *fourth*, the random selection of health service users for questionnaire administration at the selected facilities. In addition, purposive sampling was applied to select 12 key informants for conducting interviews, whereby the sample for qualitative data collection included 10 members of CHMT and 2 heads of the

Planning and Coordination Division, whose strategic roles provided their valuable insights into institutional healthcare decision-making, healthcare workforce management, and local health governance under the decentralised health delivery system.

3.3 Data Collection Methods and Tools

The study collected both primary and secondary data, where primary data was collected using a closed-ended questionnaire distributed to 385 health service users and interview guide to CHMTs and heads of the Planning and Coordination Division. Fiscal Decentralisation was operationalised using three dimensions: locally generated revenue, expenditure responsibilities assignment, and intergovernmental transfers, while Public Health Service Delivery (PHSD) performance was measured using five key dimensions, namely, availability, accessibility, quality, affordability, and responsiveness of health services. All of the variables were measured using an ordinal scale, which was a five-point Likert scale as indicated in **Table 2**. Data for contextual moderating variable (healthcare human capital capacity) was obtained using documentary review and interviewing key informants. These multiple data sources and multiple collection methods, and approaches ensured data triangulation while facilitating both descriptive and inferential analysis

Table 2: Operationalisation of Variables and Measurement Matrix

Variable	**Role**	**Operational Definition**	**No. of Items**	**Measurement Scale**
Locally Generated Revenue (X_1)	IV	The extent to which LGAs generate and control their revenue for health services.	5	5-point Likert Scale
Expenditure Resp. Assignment (X_2)	IV	LGA's autonomy in planning, prioritizing, and managing health-related expenditures.	5	5-point Likert Scale
Intergovernmental Transfers (X_3)	IV	The adequacy, predictability, and flexibility of financial transfers from central to LGA.	5	5-point Likert Scale
PHSD Outcomes (Y_{ij})	DV	Service availability, quality, accessibility, affordability and	5 Outcomes Dimensions	5-point Likert Scale

		responsiveness (outcome dimensions)	(30 items total)	

Operationalisation of 5 PHSD Outcomes Dimensions (DV)

Dimension	Role in Model	Operational Definition	No. of Items	Scale / Level of Measurement
Availability of Services	Sub-DV	Availability of basic health services and resources (drugs, staff, equipment).	6	Likert scale (1–5)
Quality of Services	Sub-DV	Perceived service quality includes provider attitudes, technical quality.	6	Likert scale (1–5)
Accessibility of Services	Sub-DV	Physical and financial accessibility of health services (e.g., distance, cost).	6	Likert scale (1–5)
Responsiveness to Community Needs	Sub-DV	The extent to which health services are responsive to local health priorities and feedback.	6	Likert scale (1–5)
Affordability of Services	Sub-DV	Reflects the cost-related barriers and availability of financial support for patients.	6	Likert scale (1–5)

IV = Independent Variable. **DV**= Dependent Variable

3.4 Validity and Reliability

A pilot study with 30 health service users was conducted to assess the questionnaire's validity, ensuring accurate measurement of the intended concepts. In this case items which were posing ambiguity were either simplified or removed, Reliability was evaluated using Cronbach's alpha, with coefficients ≥0.70 considered acceptable for internal consistency (Souza *et al*., 2017; Bolarinwa, 2015). Tests for fiscal decentralisation (FD) and public health service delivery (PHSD) outcomes, each comprised of multiple variables yielded strong reliability, with an average alpha of 0.958. The "Affordability of Services" dimension scored 0.697, slightly below the conventional threshold but acceptable given the study's exploratory nature and the construct's complexity (Souza *et al*., 2017; Bolarinwa, 2015). This proximity to 0.70 indicated minimal deviation from strong reliability, justifying its inclusion in further analysis.

3.5 Data Analysis

Quantitative data were analysed using STATA software version 17, MS Excel, and SPSS version 26. To analyse the influence of FD on the performance of PHSD, the study utilised Linear Mixed Models (LMM) and analysis of variance (ANOVA) to estimate parameters and test hypotheses. Using a Linear Mixed Model (LMM), the study treated PHSD as the dependent variable and the aspect of FD as the independent variable. LMM, also called a mixed-effects or hierarchical linear model, integrates both fixed and random effects to analyse data with hierarchical or clustered structures. This approach enabled the study to assess the effects of independent variables on health service delivery while considering the inherent correlations among observations within LGAs. By treating LGA effects as random, the LMM facilitated a more comprehensive understanding of the variation in PHSD across LGAs, enhancing the generalizability of the study's findings within the Tanzanian context and potentially to other LGAs. The LMM is described as follows:

$$Y_{ij} = \beta_0 + u_{0j} + \beta_1 X_{1ij} + \beta_2 X_{2ij} + \beta_3 X_{3ij} + \varepsilon_{ij}$$

Where:

Y_{ij} = **PHSD performance** for the $_i$**-th observation** within the j**-th LGA**

X_1 = Locally Generated Revenue X_2 Expenditure Responsibility Assignment

X_3 = Inter-governmental Transfers β_0= The fixed intercept term,

u_{0j}=The random intercept for the jth LGA, $u_{0j} \backsim N(0, \tau^2)$, ε_{ij} = **random error** for the j-th observation in the j-th LGA, $\varepsilon_{ij} \backsim N(0, \sigma^2)$

Xij = Represents the value of **independent variable** for the i-th observation in the j-th LGA.

$_i$= **individual observation or data point** within a specific LGA.

j = **specific LGA**. It acts as an identifier for each distinct LGA being studied.

Qualitative data were transcribed and analysed using deductive content analysis, where predetermined themes guided the coding process and relevant quotes from key informants and reviewed documents were matched to these themes. This approach

focused on identifying specific constructs rather than generating new concepts, aligning with best practices in health services research (Im *et al*., 2023; Elo *et al*., 2014; Bradley *et al*., 2007). Key themes such as geographical context, decentralised healthcare responsiveness, local fiscal autonomy and priority setting, locally generated revenue, and local healthcare human capital capacity were derived from the conceptual framework and supported by the quantitative findings. Integrating qualitative and quantitative results enabled more comprehensive and meaningful interpretations (Elo *et al*., 2014; Bradley *et al*., 2007).

4.0 Factor analysis of fiscal and diagnostic test

4.1. Factor Analysis for Fiscal Decentralisation

Regarding the suitability of factor analysis Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were assessed and presented in **Table 3** and **Table 4** for FD and PHSD outcomes respectively. Whereby, the KMO values for all the three FD components (locally generated revenue, Expenditure responsibility assignment and intergovernmental transfer) were above 0.8, indicating very good sampling adequacy. The Bartlett's test for all the three variables were highly significant ($p < 0.001$) confirming strong correlation among them and justifying factor analysis. Whereby all the three FD components had only one factor with an eigenvalue greater than 1 that explained most of the variance (Total Variance Explained) that was over 89%, confirming that each FD component is unidimensional and can be adequately represented by a single factor.

Table 3: KMO and Bartlett's Test Results with Total Explained variances for FD

Factor	KMO Value	Chi-Square (BTS)	df	Sig.
Locally Generated Revenue	0.867	3084.524	10	0.000
Expenditure Responsibility Assignment	0.892	3688.248	10	0.000
Inter-Governmental Transfers	0.889	4700.655	10	0.000

Total explained variances

Component	Locally Generated Revenue		Expenditure Responsibility Assignment		Inter-Governmental Transfers	
	Eigenvalues	% of Variance	Eigenvalues	% of Variance	Eigenvalues	% of Variance
1	4.468	89.366	4.691	93.827	4.829	96.572
2	0.33	6.595	0.142	2.834	0.098	1.952
3	0.116	2.311	0.098	1.963	0.044	0.89
4	0.051	1.014	0.049	0.982	0.016	0.323
5	0.036	0.714	0.02	0.395	0.013	

The KMO values for PHSD outcomes were high, whereby, the KMO value of .956 and a significant Bartlett's test (approx. Chi-Square = 15410.579, df = 435, Sig. = 0.000) confirm that variables are significantly correlated and are suitable for factor analysis. Thus, a single factor was extracted, explaining more than 59% of the total variance. The factor analysis results support the unidimensionality of PHSD outcomes, indicating the strength and reliability of the extracted factor in representing the construct.

Table 4: KMO and Bartlett's test and Total Variance explained for PHSD outcomes

Test	Value
Kaiser-Meyer-Olkin (KMO) Measure	0.956
Bartlett’s Test (Approx. Chi-Square)	15,410.579
Degrees of Freedom (df)	435
Significance (Sig.)	0.000

Total Variance Explained

Component	Initial Eigenvalues	% of Variance	Cumulative %	Extraction Sums of Squared Loadings	% of Variance	Cumulative %
1	17.786	59.285	59.285	17.786	59.285	59.285

4.2 Test diagnostic for LMM

4.2.1 Normality of Residual

Visual presentation of Normality of Residual using a histogram along with a normal distribution curve indicates the data are slightly normally distributed as per **Figure 2**. The result indicates that there is also a slight deviation from a normal distribution. Another diagnosis is the normal P-P plot, which shows the standardised residual line crossing nearly over the normal distribution line with a very slight deviation.

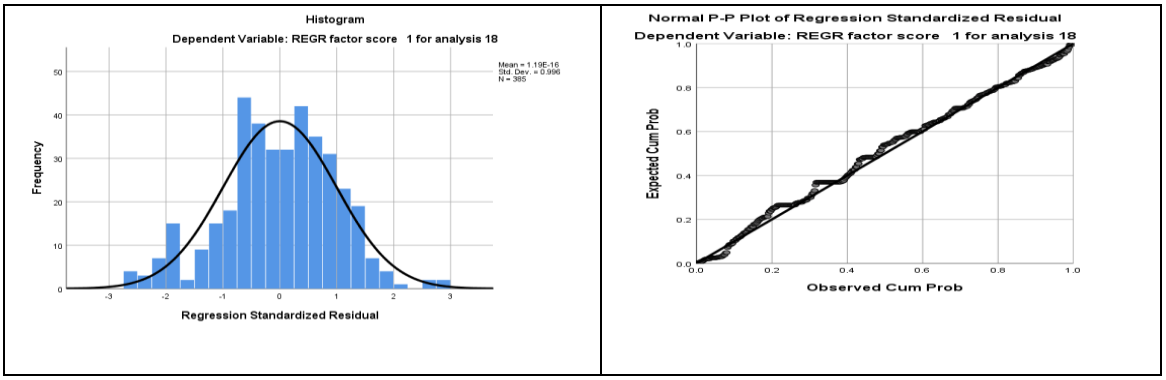

Figure 2: Normality of Residual

4.4.2 Test for Outliers

The boxplot results presented in **Figure 3** offer valuable insights into the distribution of the four variables, highlighting their central tendency, spread, skewness, and the absence of extreme outliers. Notably, the Interquartile Range (IQR) for PHSD performance (AVDV) is slightly narrower than those of the other three variables. This evidence indicates that PHSD performance has less variability or spread in the middle 50% of the data, implying that the data points are more concentrated around its median.

Figure 3: Test for Outliers using Boxplot

4.4.3 Collinearity Diagnostic

Table 5 presents collinearity statistics for the predictor variables used to explain PHSD outcomes. Collinearity diagnostic was conducted using tolerance and Variance Inflation Factor (VIF) metrics. Whereby, tolerance closer to 1 indicate low multicollinearity, while values closer to zero indicate high multicollinearity. Similarly, VIF values above 10 typically signify problematic multicollinearity, although some researchers consider VIF above 5 to be paid attention.

Table 5: Collinearity Statistics results

Independent variables	**Tolerance**	**VIF**
Locally Generated Revenue	.296	3.374
Expenditure Responsibility Assignment	.087	11.516
Inter-Governmental Transfers	.112	8.920

Dependent Variable: Public Health Service Delivery

The results indicated that *Expenditure Responsibility Assignment* (ERA) has a VIF of 11.516, thus exceeding the conventional threshold of 10, suggesting that it has high multicollinearity with other predictors. Similarly, Inter-governmental Transfers (IGT) exhibits a moderately high VIF of 8.920, signalling notable collinearity. Locally generated revenue indicated a moderate collinearity (VIF = 3.374), which is generally considered acceptable. Though ERA and IGT were tested of having high multicollinearity, they were retained in the model for subsequent analysis due to their theoretical and policy relevance as far as FD and PHSD outcomes is concerned, so dropping them could introduce biasness and lead to misspecification (Kalnins and Hill, 2023; Yu *et al.*, 2015; Kraha *et al*., 2012; Arceneaux and Huber, 2007)

5.0 Findings and Discussion

5.1 Demographic characteristics of the respondents

Table 6 presents respondents' demographic information followed by the discussion.

Table 6: Demographic characteristics of Respondents where N = 385

Variable	Frequency	Percent
LGA		
Igunga_DC	173	44.9
Kaliua DC	212	55.1
Total	**385**	**100.0**
Sex		
Male	193	50.1
Female	192	49.9
Total	**385**	**100.0**
Highest Level of Education		
No formal education	70	18.2
Dropped out from primary school	32	8.3
Primary education	229	59.5
Dropped out of secondary education	8	2.1
Secondary education	40	10.4
Certificate	2	0.5
Diploma	2	0.5
Higher education bachelor's degree or above	2	0.5
Total	**385**	**100.0**
Occupation		
Self-employed in farming	255	66.2
Self-employed in livestock keeping	1	0.3
Self-employed in business	29	7.5
Self-employed in business and farming	39	10.1
Public sector employee	3	0.8
Self-employed in farming & livestock keeping	20	5.2
unemployed	23	6.0
Self-employed in farming, public sector employee	1	0.3
Self-employed in farming and other	11	2.9
Private sector employee	3	0.8
Total	**385**	**100.0**

Table 6 shows that 50.1% of respondents were males compared to49.9% of females. This implies that there is equal distribution of respondents in terms of sex. For marital status, 80% were married, 12.7% were single, 4.9% were divorced or

separated, and 2.3% were widowed. This result suggests that a significant number of people with varying marital statuses constitute the sample size. The nature of the surveyed area is partially rural, with agriculture as the dominant economic activity. Portrayed to the descriptive analysis, about 66.2% of the respondents were self-employed in farming, followed by 10.1% self-employed in business. The rest part was comprised of public-sector employees, private-sector employees, and the unemployed.

Furthermore, respondent's age had varying characteristics suggesting that dataset has robust information from all age groups. The analysis criteria ensured the interpretability of the age dynamic that reflects the population: the average age was 35.8, the most common age was 33, and the middle age was also 30. The results also indicate the age difference between the youngest and the oldest is 59 years, given the youngest was 17 and the oldest was 76. Thus, the analysis criteria ensured the interpretability of the age dynamic that reflects the population

5.2 The Influence of FD on the Performance of PHSD

The first objective of this study was to assess the influence of FD on PHSD outcomes. To achieve this objective given the hierarchical structure of the data, where individual responses were nested within wards, a linear mixed model (LMM) was employed. This model was chosen due to its capability to capture intra-ward correlations and provides more reliable estimates compared to other linear regressions.

5.2.1 Random Intercept Model Only

The first analysis included an intercept-only (null) model to determine the baseline variability in PHSD outcomes across wards as presented in **Table 7**. The intercept was statistically insignificant (β = - 0.0098, p = 0.949), yet the variance components for wards were substantial (σ^2 = 0.228181; 95% CI: 0.086422 -0.602469), indicating that there are significant differences in PHSD outcomes across-ward. Whereby the likelihood ratio test confirmed that the random intercept model significantly outperformed the simple linear model (χ^2 (1) = 68.48, p < 0.001) even without

including any predictor variables. This finding justifies the inclusion of ward-level effects in subsequent analyses.

Table 7: Random Intercept Model Only

Log likelihood = -511.54872 **Prob > chi2 = 0.0000**					
Public Health Service Delivery Performance	**Coef.**	**Std. Err.**	**P>z**	**[95% Conf.**	**Interval]**
_cons	-0.0098	0.153652	0.949	-0.31095	0.291354
Random-effects Parameters	**Estimate**	**Std. Err.**	**[95% Conf.**	**Interval]**	
wards: Identity					
var(_cons)	0.228181	0.113033	0.086422	0.602469	
var (Residual)	0.781851	0.057209	0.677392	0.902418	

LR test vs. linear model: chibar2(01) = 68.48 Prob >= chibar2 = 0.0000

***H_{01}**: There is no significant influence of FD on the performance of PHSD in LGAs.*

These statistical results are strongly supported by the qualitative insights from the content analysis of the significance of decentralisation, as one CHMT member highlighted that decentralisation improved responsiveness to community healthcare needs by increasing the availability and accessibility of medicines, medical supplies and other health services:

> *"Regardless of some setbacks, decentralisation has led to improved responsiveness to the local community's needs by increasing the availability and accessibility of medicines and other health services. Decentralisation has led to improved and more responsive health services provided to the local community by their local health facilities".* **(CHMT2, Kaliua DC, December 2024)**

This viewpoint supports the quantitative findings, emphasising that PHSD outcomes vary significantly across wards, emphasising that fiscal and administrative autonomy

at the ward level might contribute significantly in enhancing decentralised health system responsiveness, reliability and affordability.

The findings are consistent with Bossert's Decision Space Framework and Principal-Agent Theory, both of which posit that decentralisation enhances PHSD by increasing local decision-making authority, improving accountability, and aligning local actors' actions with the community priorities. Furthermore, the findings align with earlier studies (Kigume *et al*., 2018; Lufunyo, 2017), who emphasise that the local context is one of the important factors for enhancing the impact of FD on PHSD outcomes. Additionally, the study extends the prior findings by indicating that decentralisation in Tanzania has facilitated the transfer and establishment of pharmaceutical facilities to lower-level health facilities, thus improving grassroot access to essential medicines.

5.2.2 Linear Mixed Model with Independent Variables Integrated

Subsequently, to assess the specific influence of FD components on PHSD outcomes, a full linear mixed-effects model (LMM) was estimated by incorporating three key predictors of FD locally generated revenue (LGR), expenditure responsibility assignment (ERA), and intergovernmental transfers (IGT). These constructs were operationalised from factor score analyses to reflect the practical dimensions of financial and administrative autonomy at presented in **Table 8.**

Table 8: Linear Mixed Model with Independent Variables Integrated

Log likelihood = -441.93034 **Prob > chi2 = 0.0000**						
Public Health Service Delivery Performance	**Coef.**	**Std. Err.**	**z**	**P>|z|**	**[95% Conf.**	**Interval]**
Locally Generated Revenue	0.255	0.073	3.480	0.000	0.111	0.399
Expenditure Responsibility Assignment	0.274	0.131	2.100	0.036	0.018	0.530
Inter-Governmental	0.028	0.117	0.240	0.812	-0.202	0.258

Transfers						
_cons	-0.005	0.091	-0.060	0.953	-0.184	0.173
Random-effects Parameters	**Estimate**	**Std. Err.**	**[95% Conf.**	**Interval]**		
wards: Identity						
Var (_cons)	0.07	0.04	0.02	0.21		
var (Residual)	0.56	0.04	0.48	0.64		

LR test vs. linear model: chibar2(01) = 25.72 Prob >= chibar2 = 0.0000

The LMM results (Table 9) revealed a statistically significant model fit with a chi-square value of 25.72 and a p-value of 0.0000, rejecting the null hypothesis positing that there is no significant influence of FD on PHSD outcomes. Among the three predictors, LGR emerged as the strongest and most significant positive determinant ($\beta = 0.255$, $p < 0.001$), indicating that wards with higher locally generated revenues recorded better PHSD outcomes. ERA was also significant ($\beta = 0.274$, $p = 0.036$), while IGT showed no statistical significance ($p = 0.812$), however they both contribute significantly in the model. However, due to multicollinearity issue identified earlier, little focus was paid on ERA and IGT to avoid redundancies from high correlation between predictors. The variance components indicated non-negligible ward-level effects (Var(_cons) =0.07), justifying the use of LMM.

Thus, to further examine LGR's influence on PHSD outcomes, a supplementary simple linear regression (SLR) was performed which confirmed its predictive strength, explaining 35.2% of the variance in the PHSD outcomes ($R^2 = .352$, $p < 0.001$), consistent with Ozili (2023) that, in social sciences a R^2 of 30%> is acceptable for a mode to be a good estimator.

Qualitative findings also reinforce these statistical findings, as two of the CHMT members reported that financial resources allocation followed structured national guideline but was further shaped by local priorities and availability of funds:

"The allocation of financial resources for health services in our LGA follows a structured process guided by national policies, local priorities,

and available funding sources. We rely on guidelines provided by the Ministry of Health and the Ministry of Finance, along with the Medium-Term Expenditure Framework (MTEF) and the Comprehensive Council Health Plan (CCHP)." **(CHMT3, Igunga DC, December 2024)**

Additionally, decentralisation facilitated service delivery improvements:

"There is improvement in the availability of mother and child health services in the very remote areas through the establishment of dispensaries or outreach services in areas which did not have access to these services." **(CHMT1, Igunga DC, December 2024)**

Furthermore, it was informed that FD allows LGAs to exercise autonomy in health planning and resource allocation, aligning service delivery with local health priorities. For instance, priorities are often shaped by disease burden, with high-prevalence conditions such as malaria, maternal and child health complications, HIV/AIDS, and NCDs receiving the most attention. These findings highlight the flexibility that decentralisation provides in setting context-specific goals.

"Through decentralisation, our LGA has increased autonomy to plan and implement the management and distribution of health resources, such as medical supplies and equipment, in rural health facilities based on the actual demand." (CHMT3, Igunga DC, December 2024)

"We make priorities based on the prevalence of health issues and their impact on community health. The prevalence of Malaria, complications of maternal and child health, and other conditions such as HIV/AIDS and non-communicable diseases (NCDs), which contribute to high morbidity and mortality rates, are given high priority" (CHMT1, Igunga DC, December 2024).

These findings align with those of Kigume *et al.* (2018), and Otoo and Danquah (2021), who found that fiscal autonomy, particularly LGR in enhancing health service accessibility, availability, quality and responsiveness. However, they contradict with the conclusions drawn by Fjeldstad and Katera (2017), who found no

significant influence of LGR on PHSD outcomes in Tanzanian LGAs. These differences in findings might be attributed by different decentralisation models, suggesting that LGRs may have a more direct and responsive impact on serviced delivery than centrally transferred funds.

Therefore, these findings collectively highlight the strategic importance of strengthening LGAs' fiscal autonomy, with a special focus on expanding LGR and optimising ERA, to enhance not only PHSD efficiency but also to ensure that health services are responsive to community priorities.

5.3 One-way ANOVA for differences in PHSD outcomes and LGR Across LGAs

Table 9 presents the results for analysis of variance (ANOVA) performed to confirm whether mean scores for LGR and PHSD performance significantly differed across the study LGAs. While the LMM previously confirmed existence of statistically significant associations between the study's key variables (FD and PHSD outcomes), it did not explain the extent to which group-level differences across LGAs contribute to those relationships. Therefore, One-way ANOVA was applied to add a group-comparison perspective assessing the extent to which these are attributable to location specific factors.

Table 9: One-way ANOVA for differences in PHSD Performance and LGR across LGAs

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
PHSD	17.082	1	17.082	17.831	0
LGR	14.578	1	14.578	15.113	0

1. **(H_o1a):** There are no significant differences in mean scores of LGR across different locations.
2. **(H_o1b):** There are no significant differences in mean scores of PHSD Performance across different locations within the studied LGAs.

Locally Generated Revenue (LGR) Across LGAs

ANOVA results revealed statistically significant group differences in mean scores of LGR across LGAs (F-statistic = 15.113, p -value <0.001). This rejects the null hypothesis positing there are no differences in the mean scores of LGR across

locations, suggesting that fiscal capacities vary significantly across LGAs, potentially due to differences in their economic bases, revenue mobilisation efficiency and administrative autonomy and responsiveness to community healthcare needs.

PHSD outcomes Across LGAs

Similarly, the ANOVA test results for PHSD outcomes differed significantly across LGAs (F= 17.831, p< 0.001), rejecting the null hypothesis of equal mean scores of PHSD performance across the different localities. These differences are likely to reflect variations in financial resources availability, local administrative autonomy and responsiveness to community healthcare needs.

Both ANOVA tests findings underscore that decentralisation does not impact LGAs uniformly. Variations in LGR and PHSD outcomes are geographically concentrated, highlighting the influence of local governance structures and fiscal capacity on health service delivery outcomes. The results agree with those of the study conducted in Tanzanian context by Sarwatt *et al.* (2025), Msacky (2024) and URT (2024) who found uneven healthcare quality under decentralisation and Lufunyo and Palangyo (2017), who emphasised the role of institutional characteristics in shaping PHSD outcomes. Similarly, aligns with the findings of Nakatani et al. (2023) that revealed uneven PHSD performance even in districts with similar level of fiscal autonomy.

Thus, as decentralisation's effects on PHSD outcomes are not uneven (non-linear) across LGAs, driven by differences in their fiscal capacity, governance quality and institutional structures, it calls for context-specific policies to ensure equitable outcomes.

5.4 Differences in PHSD across LGAs based on Healthcare Human Capital Capacity

The second objective of the study was to assess variation in PHSD outcomes as result of variations in healthcare human capital capacity. The study examined whether variations in healthcare human capital capacity (HHCC) explain differences in PHSD outcomes under FD. While no statistical interaction test was conducted (for the HHCC moderating effects) as the data for HHCC was obtained via interviews

and documentary review, the mixed-methods analysis provides evidence that HHCC functions as a contextual moderator.

Figure 4 presents the quantitative data obtained from reviewing study LGAs' plans and budget indicating approved healthcare Personnel Emolument (PE). The quantitative patterns suggest that Igunga DC's higher staffing level (55.9%) has supported relatively better service responsiveness and programs execution compared to Kaliua DC's which has lower health personnel coverage (32.0%). However, both LGAs face shortage in key cadre especially doctors, nurses, laboratory technologists and pharmacists, thus are constrained in their ability to deliver health services equitably, with rural communities most affected.

Figure 4: Distribution of healthcare personnel across the surveyed LGAs (Igunga and Kaliua, 2024/2025)

Qualitative findings from CHMT interviews provided comprehensive context. For example, CHMT1 reported that recent investment in rural health infrastructure had improved staffing levels in some facilities:

> *"In some of our rural wards, the new dispensaries have attracted staff because they are better equipped and closer to where the workers live. This has helped reduce workload in the busiest facilities." (CHMT1, Igunga DC,* **December 2024***)*

In contrast, CHMT3 emphasised persistent shortages and high turnover in remote areas that remain as a significant barrier:

> *"Yes, we have new buildings, but they remain underutilised because we cannot retain skilled staff in the remote posts. They request for transfer after a few months of deployment." (CHMT3, Kaliua DC, December, 2024)*

They further explained that infrastructure development alone cannot address human resource gaps without complementary strategies such as competitive incentives, professional development opportunities, and supportive working conditions.

> *"Without proper incentives and opportunities for training, even a well-built facility will not keep health workers motivated to stay." (CHMT3, Kaliua DC, December, 2024)*

The study reinforces global and Tanzanian empirical evidence that healthcare human capital capacity defined by staff size, skill mix, retention, and training play a significant moderating role on the influence of FD on PHSD outcomes (Charles et al., 2025; Anghel and Almășan, 2024; Rotulo et al., 2022; Okoroafor et al., 2021; Chege et al., 2020). In Igunga and Kaliua, well-staffed facilities converted FD-driven infrastructure and budgetary discretion into measurable gains in accessibility, quality, and responsiveness, while areas with persistent shortages and high turnover saw little improvement despite similar fiscal inputs. These findings mirror results from rural Kenya, where human capital explained nearly half of PHSD variance (Juma et al., 2023), and align with studies showing FD's potential is undermined without sufficient, equitably distributed, and motivated health workers (Charles et al., 2025; Xu and Lin, 2022; World Bank, 2021). The findings also validate Tanzanian studies (Kigume and Maluka, 2019; Likwelile and Assey, 2023) emphasising that health workers motivation, deployment equity, and training play significant role in facilitating absorption and effective utilisation of decentralised funds.

Thus, the study findings challenge the null hypothesis positing that, HHCC does not significantly moderate the relationship between FD and PHSD outcomes in LGAs. The findings underscore that FD is necessary but insufficient for improving PHSD outcomes in rural LGAs; thus, its success depends on deliberate investment in HHCC to ensure that fiscal and infrastructural improvements translate into sustainable service improvements.

6.1 Theoretical Implications

The study aligns with Bossert's Decision Space Framework by validating that varying levels of decision-making authority at the ward affect the performance of

health services. Furthermore, it confirms that greater financial autonomy enhances PHSD, but its effects differ across LGAs based on their decision-making capacity. The results also support the Principal-Agent Theory, showing that differences in performance are caused by differences in the abilities of each LGA and how the central authority monitors them. The results suggest that structured fiscal autonomy, improved monitoring, and technical support in a decentralised primary health system are essential for enhancing PHSD performance because they ensure both service delivery efficiency and equity.

6.2 Conclusion and Recommendations

The study proves that FD positively influences PHSD outcomes, particularly at the lower local government (ward) level by enabling effective resource allocation and utilisation. Since decentralisation's influences on PHSD performance vary across locations even in the same LGA, continued monitoring and specified interventions, such as ensuring accountability for maximising decentralization's benefits, are inevitable. Furthermore, the findings confirm that FD, especially through LGR, plays a crucial role in improving PHSD, whereas, decentralisation has led to a more responsive and efficient health system in better-resourced LGAs, while the resource-constrained LGAs continue to face implementation challenges. Hence, effective FD not only enhances service quality and affordability but also expands public healthcare access to the local communities.

Thus, for enhanced impact of FD on PHSD outcomes, the study recommends, first, LGAs-context-sensitive and capacity-driven approaches such as enhanced own revenue-generation capacities by improving fiscal frameworks that lead to better planning and responsiveness in health service delivery. Second, implement tailored resource allocation strategies that reflect local health priorities, population needs, and demographic patterns to ensure equity and efficiency across wards. Thirdly, LGAs should implement incentive-based healthcare personnel retention schemes to address healthcare staff shortage in underserved areas; institutionalise M&E to guide evidence-based decision-making for promoting both upward and downward accountability, mitigate the misuse of devolved resources and to build public trust in their local health governance. Lastly, increase investment in CHMTs and Planning

division's staff capacity building to enhance their technical and managerial capacity. This may include more training on modern financial management, healthcare planning and participatory governance such that the LGAs will be able to absorb, allocate and utilise resources effectively and efficiently under the decentralised health delivery framework.

This study used a cross-sectional design, which limits the ability to establish causal relationships and trach changes over time. Therefore, future studies should use longitudinal data to assess FD's long-term impacts on PHSD outcomes so as to inform future national health and decentralisation policy adjustments.

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