

RESEARCH REPORT

Understanding the experience, preferences and effects of provider payment mechanisms in Tanzania

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List of Acronyms

ANC	Antenatal Care
DCE	Discrete Choice Experiment
DHFF	Direct Health Facility Financing
DRG	Diagnosis-Related Group
FFS	Fee-for-Service
FGD	Focus Group Discussion
HSBF	Health Sector Basket Fund
ICHF	Improved Community Health Fund
IDI	In-Depth Interview
IPD	Inpatient Department
KII	Key Informant Interview
MOH	Ministry of Health
NHIF	National Health Insurance Fund
NSSF	National Social Security Fund
OPD	Outpatient Department
P4P	Pay for Performance
PHC	Primary Health Care
PMO-RALG	Prime Ministers' Office – Regional Administration and Local Government
PPM	Provider Payment Mechanism
RBF	Results-Based Financing
SD	Standard Deviation
SE	Standard Error
SHIB	Social Health Insurance Benefit
UHC	Universal Health Coverage
UHI	Universal Health Insurance

Executive Summary

Introduction

Achieving Universal Health Coverage (UHC) requires strong health financing systems that mobilise funds, expand prepayment, and use strategic purchasing to ensure quality care without financial hardship. Strategic purchasing involves decisions about what services to buy, from whom, and how to pay providers. Provider payment mechanisms (PPMs) shape provider behaviour through features like rates, frequency, and performance requirements. Many LMICs, including Tanzania, use multiple PPMs—such as fee-for-service, capitation, and line-item budgets—which can create mixed incentives and administrative burden. Aligning these mechanisms is therefore critical for improving efficiency, accountability, and provider performance. With Tanzania's 2023 Universal Health Insurance (UHI) Act laying the foundation for a mandatory national scheme, evidence is urgently needed to guide the design of effective PPMs for UHI. To design better and optimal PPMs, there is a need to explore the experience from providers and purchasers, their preferences and associated effect on healthcare quality.

Aim and objectives

In response, the Ifakara Health Institute (IHI) conducted a research study (2023-2025) that was funded by the UK Research and Innovation (UKRI) through Medical Research Council (MRC) and the UK Foreign Commonwealth & Development Office (FCDO). The research had four specific objectives: (i) review and map existing PPMs in Tanzania; (ii) examine provider and purchaser experiences with current payment systems; (iii) explore provider preferences for capitation design attributes; and (iv) assess the differential effects of NHIF fee-for-service and ICHF capitation on healthcare quality and equity.

Research methods

The study applied a mixed-methods design at national and sub-national levels, covering 84 primary healthcare facilities in Singida and Manyara regions. Data collection included: a review of documents; two rounds of qualitative interviews with 21 providers and managers; 14 group interviews with providers and managers; 10 interviews with purchasers; patient exit interviews with 475 clients; and a survey of 245 healthcare workers in 84 facilities. The health worker survey including a discrete choice experiment (DCE) using five capitation attributes: adequacy of payment amount, service to be covered, payment schedule, additional payment for high performing facilities and timeliness of payment, each with different levels. Data was collected in 2023 and 2024. Qualitative interviews and discussions were transcribed, translated, and thematically analysed using NVivo, while quantitative data were analysed using STATA version 16.

Findings

Work Package (WP1): Characteristics of Provider Payment Methods (PPMs) in Tanzania

Tanzania operates multiple PPMs, each with distinct design features, payment flows, and accountability arrangements. National Health Insurance Fund (NHIF) uses a retrospective fee-for-service system with a broad provider network and comprehensive benefits, though payments depend heavily on claims volume. Improved Community Health Fund (ICHF) applies a utilisation-based capitation model for public and faith-based PHC facilities, paying monthly based on service use with basic PHC coverage and DHIS2-verified reporting. Social Health Benefit (SHB) under the National Social Security Fund (NSSF) combines capitation with fee-per-visit payments for referrals, covering outpatient services and drugs through quarterly retrospective payments with minimal delays. Health Sector Basket Fund (HSBF) through the Direct Health Facility Financing (DHFF) uses prospective, quarterly capitation adjusted for utilisation, catchment population size,

distance from facility to district headquarters and drug availability, offering greater facility autonomy, enhancing equity and lighter reporting. Tanzania also has line-item budgeting and salary for government funding as well as direct out-of-pocket payments, but the study did not examine these two PPMs into details. Overall, Tanzania's PPMs differ in payment timing (retrospective vs prospective), service coverage, provider networks, and the strength of performance-linked incentives, with capitation models increasingly integrating equity and performance adjustments, while fee-for-service remains driven by claims volume.

WP 2: Provider and Purchaser Experiences with Existing PPMs in Tanzania

WP2 findings show that provider and purchaser experiences with NHIF, ICHF, and HSBF differ widely across key payment attributes, shaping how facilities plan, deliver, and sustain services. NHIF fee-for-service is viewed as the most reliable revenue source with broad service coverage, though reimbursement rates are partially adequate and subject to unpredictable deductions. ICHF capitation contributes least to facility revenue and is widely considered inadequate, unpredictable, and affected by long delays, unclear reimbursement formula, and a narrow PHC service package. HSBF capitation is a major funding source for many PHC facilities—especially in rural areas—but is also seen as insufficient in urban areas and affected by disbursement delays up to two quarters sometime. Across PPMs, most providers reported payment inadequacy, weak adherence to payment schedules, and substantial delays, with ICHF experiencing the longest delays. NHIF and ICHF impose heavy reporting burdens due to detailed claims requirements, while HSBF has lighter reporting through routine DHIS2. Providers valued performance incentives in PPMs but noted that some utilisation-based indicators are difficult to control and not well understood. Overall, PPM design and implementation contribute to inadequate payments, limited predictability, huge administrative burden, and uneven incentives, limiting efficiency, responsiveness, and performance across the system.

WP3: Provider Preferences for Capitation Design Attributes in Tanzania

PHC providers were generally supportive of capitation as a payment model, but only when it is well designed—adequate, frequent, timely, and linked to clear performance incentives. PHC providers expressed strong preferences for several key features of capitation. First, they favoured adequate payment levels, preferred reimbursement rates that fully cover service delivery costs, or—where this is not feasible—the option to allow client co-payments to address funding gaps. Second, providers preferred broad service coverage under capitation, including outpatient and inpatient care, essential medicines, and diagnostic tests. Third, they valued a frequent payment schedule, with monthly or quarterly payments viewed as most supportive of smooth facility operations. Fourth, timely disbursement was essential, with providers emphasising that funds should be released according to the agreed payment schedule and without delays. Finally, providers preferred capitation designs that include performance incentives, particularly models that apply performance-based adjustments to reward quality and good performance, provided that indicators are fair, transparent, and realistically aligned with their working conditions. However, preferences were not uniform: they varied across facility levels and cadres. Higher level facilities (hospitals and health centres) compared to dispensary expressing slightly stronger preferences for adequate capitation amounts and comprehensive service coverage. Facility in-charges expressed stronger preferences for improved capitation design than other staff, reflecting their central role in managing facility resources and accountability.

WP4: Effects of PPMs on service quality and equity in Tanzania

Overall, the comparison of client experiences under fee-for-service (NHIF) and capitation (ICHF) shows that differences in PPMs did not translate into major variations in the experience or

quality of care received. Waiting and consultation times were nearly identical across the two schemes, suggesting that payment modality in Tanzania had limited influence on workflow or provider responsiveness. However, NHIF clients under fee-for-service reported higher likelihood of drug prescriptions and better access to prescribed medicines, indicating that fee-for-service may influence drug prescription and availability at facilities. Perceived quality gaps were low and comparable between schemes, with fewer than 11% of clients reporting missed or unnecessary services. Trust in facilities was higher among NHIF clients, potentially reflecting broader benefits coverage and more predictable service access. Despite these perceptions, adherence to clinical care standards—particularly ANC and OPD content of care—remained suboptimal and similarly low across both schemes, highlighting a system-wide quality challenge beyond payment method design. Overall, while fee-for-service showed some advantages in drug access and client trust, the findings suggest that neither payment method substantially improved the technical quality of care, pointing to the need for strengthened quality assurance mechanisms alongside payment reforms.

Policy Recommendations

WP2: Provider & Purchaser Experience with Existing PPMs

- **Align payment rates with service costs:** Review and adjust capitation and reimbursement rates to match actual costs and reduce facility deficits.
- **Increase predictability and transparency:** Clearly communicate capitation formulas and reimbursement rules to improve provider planning and reduce uncertainty.
- **Ensure timely and reliable disbursement:** Align with payment schedules and simplify claims and verification processes to improve provider trust and service continuity.
- **Simplify and standardise reporting:** Harmonise and streamline reporting requirements across PPMs, supported by provider capacity-building.
- **Use context-sensitive performance incentives:** Co-develop fair and locally relevant performance indicators and capitation adjustors with providers and other stakeholders.

WP3: Provider Preferences for Capitation Design

- **Engage providers in capitation design:** Systematically integrate provider views into capitation design and selection of adjustors. This will enhance ownership, trust and implementation.
- **Include equity and performance adjustors:** Use context-appropriate indicators (e.g., workload, remoteness, quality) to enhance fairness and incentivise performance.
- **Ensure timely payments:** Adhere to agreed disbursement schedules to support service planning, responsiveness to population needs, and provider confidence.
- **Provide adequate rates and broad coverage:** Set rates that cover essential services, including drugs and diagnostics, to prevent service gaps and reduce out-of-pocket payments.

WP4: Effects of PPMs on Healthcare Quality

- **Invest beyond payment reforms:** Complement PPM reforms with improvements in drug supply, data systems, supervision, and accountability.
- **Advance equity in access:** Use equity-adjusted formulas and timely funding to ensure underserved populations receive adequate resources.
- **Set fair and transparent payment rates:** Regularly review rates and integrate equity and performance adjustors to motivate quality care.
- **Strengthen oversight of fee-for-service:** Implement strong verification and audit systems to control overuse, unnecessary care, and cost escalation.

1. Background

Achieving Universal Health Coverage (UHC) requires that all individuals receive the health services they need—of adequate quality and without experiencing financial hardship (WHO 2010). Realising this vision depends on the strength and organisation of a country's health financing system, particularly its ability to mobilise sufficient resources, pool funds equitably, and purchase services strategically (Kutzin 2001; WHO 2010). Across low- and middle-income countries (LMICs), governments are implementing reforms that aim to increase domestic health financing, expand prepayment through insurance or tax mechanisms, and shift from passive to strategic purchasing arrangements (Atim et al. 2021; Cashin & Dossou 2021; Gatome-Munyua et al. 2022; Hanson et al. 2019). These reforms are central to ensuring that resources are used efficiently, providers are incentivised appropriately, and populations receive essential care.

Healthcare purchasing involves the transfer of pooled funds to health care providers for service delivery on behalf of certain groups/ population (Kutzin 2001; Mathauer et al. 2017). To achieve the UHC goal, the purchasing function should be strategic (e.g. output-based payment) as opposed to passive purchasing (e.g. traditional input-based payment) (Mathauer et al. 2017; RESYST 2014). Strategic purchasing refers to the process by which purchasers make deliberate decisions about three core elements: what health services to buy (benefit package design), from whom to buy them (provider selection and accreditation), and how to pay for them (contracting and provider payment mechanisms) (Hanson et al. 2019; Mathauer & Dkhimi 2019; RESYST 2014). Strategic health purchasing is increasingly recognised as an important tool to enhance better use and allocation of resources towards UHC (Hanson et al. 2019; Kutzin 2013; Mathauer et al. 2017).

Provider payment mechanism (PPM) is a critical component of the strategic healthcare purchasing. PPMs embed key design features such as payment rates, adjustment formulas, performance conditions, reporting requirements, and accountability provisions (Kazungu et al. 2018); which sends different economic signals or incentives to providers that may lead to different providers' responses (intended or unintended) and affect health care quality and delivery (Gosden et al. 2000; Lagarde et al. 2010; Langenbrunner et al. 2009; Robyn et al. 2014). When appropriately designed, PPMs can enhance provider performance, reduce inefficiencies, and strengthen health system accountability. Conversely, poorly designed or fragmented PPMs may distort priorities, burden providers with excessive reporting demands, weaken performance, and reduce value for money.

Many LMICs—including Tanzania—use a mix of multiple PPMs, such as fee-for-service, capitation, line-item budgets, performance-based financing, and salaries (Table 1). While each PPM has advantages, their coexistence often creates conflicting incentives, administrative complexity, duplication of reporting systems, and challenges in achieving coherent strategic purchasing objectives. For health systems pursuing UHC, aligning and rationalising PPMs is therefore essential to improve efficiency, promote service quality, reduce fragmentation, and ensure predictable and fair provider funding.

Tanzania is currently at a pivotal moment. In 2023, the Government enacted the Universal Health Insurance (UHI) Act, establishing the legal foundation for a mandatory national health insurance scheme that aims to cover the entire population through payroll taxes, informal-sector premiums, and government subsidies for the poor. Tanzania's UHI seeks to unify existing schemes, National Health Insurance Fund (NHIF) and Improved Community Health Fund (ICHF), under a standardized benefits framework, with phased implementation starting in 2026. The

operationalisation of UHI requires critical design choices such as what services the scheme will cover, how much households and employers will contribute, how providers will be contracted, and most importantly, how they will be paid. Provider payment arrangements will determine the financial sustainability of the UHI, incentives for service delivery, the scheme's ability to safeguard quality, and the overall experience of both providers and patients.

As these policy decisions are being formulated, robust evidence is urgently needed to guide the design of PPMs that are context-appropriate, equitable, efficient, and aligned with UHC goals. In response, the **Ifakara Health Institute (IHI)** conducted a research project (2023-2025) which assessed existing payment arrangements, examined provider preferences and PPM effects, and generated actionable insights to inform the UHI provider payment reforms in Tanzania.

Table 1: A description of provider payment mechanisms (taxonomy)

Provider payment mechanisms (PPM)	Description
Global budget	This is a prospective payment where health care providers are given an amount of money to spend, with total flexibility on how and what to spend on, to deliver an agreed-upon set of services.
Line-item budget	This is a prospective payment where providers receive a given amount of money to spend on specific itemised services. The budget is not flexible, and expenditure must follow line items, unless with prior authorisation from relevant authorities.
Fee-for-service (FFS)	This is a retrospective activity-based/ service-based reimbursement method where health care providers are reimbursed for each individual service provided.
Capitation (per capita)	This is a prospective payment method where providers receive a fixed amount of money prior to service delivery, to provide agreed services for each registered individual over a fixed period.
Per diem	This is a payment method where health care providers are paid a fixed amount for given services per day. However, this is not a common payment method.
Case-based payment/ diagnosis-related groups (DRG)	This is a payment method where providers are paid a fixed amount per case such as for each diagnosis, admission, or discharge.
Pay-for-performance (P4P)/ results-based financing (RBF)	This is a retrospective payment method which involves paying health care providers on the basis of meeting certain performance thresholds based on predetermined measures. This is an incentive-based payment

Sources: Adapted from (Mathauer et al. 2017; RESYST 2014) (Kazungu et al. 2018).

2. Study Objectives

This study aims to understand better the existing PPMs, provider perceptions and preferences with regards to these, and the associated effects of PPMs on service delivery.

This study has four specific objectives including:

1. To characterise each provider payment method by describing its features, reforms, and its rationale for introduction.
2. To explore and compare the providers' and purchasers' experience with current payment methods.
3. To elicit provider preferences for capitation design attributes.
4. To examine the effects of PPMs on health care quality and equity.

3. Methodology

3.1. Study Design

This study used a mixed-methods study design including qualitative and quantitative methods to address respective research objectives. We started by doing literature review followed by qualitative interviews with different stakeholders and key informants, and two quantitative surveys: patient exit-interviews and a discrete choice experiment with health workers.

3.2. Study Sites

This study was conducted in two purposely selected regions (Singida and Manyara). The selection of these regions focused on regions with existing multiple funding sources (indirectly capturing multiple PPMs), reflecting regions with relatively larger coverage of community-based health insurance (ICHF). We selected three districts in each region for quantitative surveys, while qualitative interviews focused on one district per region. These districts were purposively selected to ensure rural and urban representation.

3.3. Detailed Methods for Each Objective (Work Package)

This section summarises the methods used to address the study objectives, organised across four integrated work packages (WP).

3.3.1. WP1: Characterising provider payment methods (PPMs)

WP1 used two methods: (i) literature review, and (ii) key informant interviews (KIIs). By using these methods, this package described the features, reforms, and rationale of each PPM in Tanzania (Table 2). We reviewed national policies, strategies, purchaser guidelines, and related documents obtained from government and purchaser institutions. In addition, ten national-level KIIs were conducted with policy makers. Data were thematically synthesised to produce PPM profiles for guiding the development of interview questions for subsequent WPs.

Table 2: Financing mechanisms and provider payment methods (PPMs) in Tanzania

Financing mechanisms	PPMs	Description
Government funding (tax revenue)	Line-item budget	Paying for inputs, including monthly salaries and advance payments to the facility to cover specific line items such as drugs or supplies.
Donor Health Sector Basket Fund (HSBF)	Capitation	Uses a prospective formula-based capitation with adjustors at the facility level. Adjustors include catchment population, distance, and service utilization.
NHIF – Public servant mandatory insurance scheme	Fee for service	A payment for each service provided based on benefit package stipulated including consultation, diagnostic tests, and drugs.
ICHF – Voluntary for the informal sector workers	Capitation	Uses retrospective capitation payments based on utilization adjustor only, and paid retrospectively after claim submission.
Social Health Benefit (SHB) under National Social Security Fund (NSSF) contributors	Capitation and Fee-per-visit for referrals	Facilities chosen by clients are contracted by the purchaser and paid on a capitation, fixed amount per member registered prospectively. All referrals (within and between facilities) are reimbursed through fee-per-visit after claim submission.
Household payments	Direct out-of-pocket payment	Patients pay directly for services at the point of care.

Notes: WP1 did not focus much on line-item budget and out-of-pocket as they have limited distinctive features for comparison with other payment methods.

3.3.2. WP2: Exploring provider and purchaser experiences with PPMs

This package relied on three methods: (i) in-depth interviews (IDIs), (ii) key informant interviews (KIIs), and (iii) group interviews. These qualitative interviews examined providers' and purchasers' experience of current PPMs (Table 2) and compared views across groups. Two districts per region were purposively selected. In each district, interviews involved health managers and health workers from a district hospital, four health centres and four dispensaries. In total, we had two rounds of IDIs with 21 providers and managers, 14 group interviews with managers, and 10 KIIs with purchasers. Purchaser perspectives came from government, development partners, insurance agencies, and out-of-pocket paying clients. Data were collected using semi-structured topic guides and analysed thematically using NVivo.

3.3.3. WP3: Eliciting provider preferences for capitation design attributes

A Discrete Choice Experience (DCE) was used in this component to quantify providers' preferences for capitation design attributes (Clark et al. 2014; de Bekker-Grob et al. 2012; Lancsar & Louviere 2008). A mixed methods approach was used to systematically develop attributes and levels for the DCE. This involved four steps, which are partly covered in WP1-2: literature review, qualitative interviews, expert opinions, and experimental design with a pilot study (Coast et al. 2012; Coast & Horrocks 2007; Helter & Boehler 2016). The DCE used five capitation attributes: *adequacy of payment amount, service to be covered, payment schedule, additional payment for high performing facilities and timeliness of payment*, each with different levels (Table 3). We used a D-efficient design and coefficients from pilot study (n=28 health workers) to generate two blocks, each with forced 12 unlabelled choice sets of two hypothetical payment methods

(capitation A and B). We did not include the opt-out option because the planned UHI implementation will be mandatory for all public facilities in Tanzania. The DCE was administered to 245 health workers from 84 PHC facilities in 6 districts. Data were analysed using mixed multinomial and conditional logit models to estimate the main effects, followed by more flexible mixed MNL models to explore the preference heterogeneity, trade-offs for willingness to accept and policy option simulations (Hole 2007; Lancsar et al. 2017; Revelt & Train 2000; Train 2009). We also estimated the relative importance of each attribute using partial log likelihood contributions (Lancsar et al. 2007). To explore preference heterogeneity, we conducted subgroup analyses based on policy-relevant respondent characteristics (Hole 2008; Ryan et al. 2012). These included: facility level of care (dispensary vs. non-dispensary), facility location/region (Singida vs. Manyara), and healthcare worker job position (facility in-charge vs not).

Table 3: DCE attributes and levels for healthcare workers in Tanzania

No.	PPM attributes	Level 1	Level 2	Level 3	Level 4
1.	Adequacy of payment amount	Adequate (covers all costs)	Inadequate, but allowed co-payment	Inadequate, and no co-payment	
2.	Services covered by payments	Basic coverage (OPD services)	Standard coverage (OPD + Lab tests)	Comprehensive coverage (OPD + Lab tests + drugs)	Full coverage (OPD+ Lab tests+ drugs + IPD)
3.	Payment schedule	Monthly (1 month)	Quarterly (3months)	Bi-annually (6months)	
4.	Timeliness of payment	Timely payment (per agreed timeframe)	Short delay (1-3 months)	Long delay (> 3 months)	
5.	Additional payment for high-performing facilities	0% bonus	10% bonus for high-performing facilities	20% bonus for high-performing facilities	30% bonus for high-performing facilities

3.3.4. WP4: Examining the effects of PPMs on service quality and equity

Three methods were used in WP4: (i) patient exit-interviews, (ii) qualitative interviews (IDIs), and (iii) focus-group discussion (FGDs). Patient exit-interviews involved 475 patients/clients across 28 facilities in two regions (Table 4). These clients included a mix of insured and uninsured (3-10) per facility from outpatient and antenatal care department. The analysis was restricted to insured clients (n=227) in order to proxy a comparison of PPM across insurance schemes. Quantitative data from insured clients used to assessed the effect of PPMs on service quality and equity of care. Quality indicators included waiting time, interpersonal care, drug availability, and content of care. Composite quality scores were generated and compared across PPMs. Equity was examined using socioeconomic stratification. Complementary qualitative interviews (20 IDIs with patients) and 10 FGDs with patients explored perceived differences in quality across funding

mechanisms. Qualitative data from FGDs and IDIs were transcribed, translated, and thematically analysed using NVivo. Quantitative data were analysed using STATA. Data were collected in 2023 and 2024.

Table 4: Sampling strategy

Variable	Region 1	Region 2	Total
Districts to be sampled (n=6) (3 per region)	3	3	6
Health facilities for DCE (n=84)			
• District hospitals (1/ district)	3	3	8
• Health centres (2 public and 1 non-public) (3/ district)	9	9	18
• Dispensaries (6 public and 4 non-public) (10/ district)	30	30	60
Health care workers for DCE (n=240)			
• District hospitals (5 per facility)	15	15	30
• Health centres (5 per facility)	45	45	90
• Dispensaries (2 per facility)	60	60	120
Health facilities for Exit Interviews (n=28, 7 per district)			
Total clients= 475 from 28 facilities	2	2	4
• District hospitals (1/ district)	6	6	12
• Health centres (2 public and 1 non-public) (3/ district)	6	6	12
• Dispensaries (2 public and 1 non-public) (3/ district)			
Health care purchasers (n=20) – (managers + clients)			
• Government officials (MOH, PMO-RALG)			4
• Representatives from development partners			2
• Health insurance agencies' officials (NHIF, ICHF, SHB)			4
• Clients that pay out-of-pocket (5 per region) (FGD)			10
Key informant interviews (KIs) with 10 purchasers			10
Focus Group Discussions with patients (4 FGDs per region)	4	4	8
In-depth interviews (IDIs) with 20 patients (10 per region)	10	10	20

Notes: FGD involved clients around health centres only; health workers from each facility included facility in-charge and other normal staff; 2 health managers as providers were interviewed per district; the non-public facilities included faith-based and private facilities; patient-exit interviews involved at most 10 patients per health facility.

4. Findings

4.1. WP1: Characteristics of Key Provider Payment Methods (PPMs) in Tanzania

Tanzania implements a variety of PPMs across its health financing schemes, each with distinct design features, coverage, and operational modalities (Table 5).

NHIF (Fee-for-Service) shifted post-2012 to a pure FFS model to enhance claim traceability and management. It covers a broad network of public and private facilities, pays retrospectively after claims submission (usually within 60 days, though delays occur), and offers a comprehensive benefit package. Payments depend on claims volume, with accountability ensured through detailed claims verification.

ICHF (Capitation) introduced in 2017/18, applies a utilisation-based capitation formula to improve equity, efficiency, and accountability. It primarily covers public and faith-based PHC facilities, pays retrospectively based on utilisation (monthly, with occasional delays), and provides basic PHC services. Performance incentives are linked to utilisation, and reporting relies on utilisation claims verified via DHIS2.

SHB (Capitation & Fee-per-Visit) has no documented reforms. It covers mixed public and private urban facilities and uses a combination of capitation (annual per-person rate) and fee-per-visit for referrals. Payments are retrospective, quarterly, with minimal delays. Service coverage includes outpatient services, drugs, tests, and capped inpatient care. Performance is indirectly linked to enrolment numbers, with accountability through claims verification.

HSBF (Capitation under DHFF) introduced in 2017/18 to improve timely facility financing and autonomy. Primarily targeting public facilities and voluntary agency hospitals, HSBF uses a prospective capitation formula adjusted for utilisation, catchment size, distance, family planning use, and drug availability. Payments are made quarterly in advance, covering PHC operational costs, and performance incentives are embedded in the capitation formula, with lighter reporting based on DHIS2 data.

Overall, the PPMs differ mainly in payment flow (retrospective vs prospective), service coverage (comprehensive vs basic PHC), provider network, and the extent of performance-linked incentives. Capitation schemes increasingly incorporate performance and equity adjustors, whereas FFS relies primarily on claims volume.

Table 5: The characteristics of key provider payment methods in Tanzania

PPM Characteristics	NHIF – Fee-for-Service (FFS)	ICHF – Capitation	SHB – Capitation and Fee-per-Visit	HSBF – Capitation
PPM reforms and rationale	Post-2012 shifted from a mix (FFS + capitation) to pure FFS to improve traceability and manage claims.	In 2017/18, capitation formula started with facility-level adjustors [60% utilisation, 30% enrolment and 10% population] to improve equity, efficiency, and accountability.	No documented reforms	In 2017/18, capitation formula started with facility-level adjustors to improve timely facility financing, autonomy, and responsiveness to needs – under DHFF.
PPM design to date	NHIF uses FFS –to pay contracted facilities after claim submission.	ICHF uses capitation with a utilisation adjustor only, due to impractical use of enrolment.	SHB uses capitation (fixed rate per person annually by provider type) & fee-per-visit (for referrals).	HSBF uses capitation– adjusted for 40% catchment size, 10% distance, 40% utilisation, 10% family planning use and drug availability.
Provider coverage	Broad network of providers (public + private), across levels.	Mostly public and faith-based PHC facilities.	Mixed (public + private), primarily urban-based.	Primarily public facilities and voluntary agency hospitals.
Payment flow by design	Retrospective—payment after service delivery and claims submission.	Retrospective—payment after service delivery and claims submission based on utilisation.	Retrospective—payment after service delivery and claims submission.	Prospective—payments made in advance before service delivery, no claims submission.
Payment schedule & timeliness	Payments within 60 days, but delays occur.	Monthly, with common delays due to claim processing.	Quarterly, with minimal delays reported.	Quarterly, but delays occur, sometime payments for two quarters at once.
Service coverage	Comprehensive benefit package across facility types (including specialised care).	Basic package PHC services up to regional level (general outpatient and inpatient care).	Outpatient services, drugs, tests and inpatient services cap (e.g., 42 inpatient days).	Covers PHC operation costs, including medicines, supplies, and utilities.
Performance incentives	No direct performance link, but payment depends on claims/ utilisation volume.	Uses utilisation as performance-based adjustor.	Considered indirectly (number of clients enrolled per facility).	Uses performance-based adjustors (e.g., service use, drug availability).
Accountability mechanisms	Requires detailed claims and verification.	Requires utilisation claims submission; verified via DHIS2.	Requires claims, with verification.	Lighter reporting required, based on routine DHIS2 utilisation data.

4.2. WP2: Provider and purchaser experiences with payment methods in Tanzania

Provider experiences with existing payment methods for NHIF, ICHF, and HSBF vary significantly across payment attributes/ themes: revenue contribution, adequacy of payment rates, predictability, reporting burden, and incentives for performance (Table 6 & 7).

Table 6: Provider experiences with existing payment methods in Tanzania

Theme	NHIF (Fee-for-service)	ICHF (Capitation)	HSBF (Capitation)
Contribution to provider revenue	Key source of revenue for public and private facilities.	Minor revenue contributor due to implementation and enrolment challenges.	Significant source of revenue for facilities, especially in rural facilities.
Adequacy of payment rates	Partially inadequate – most providers (73%) said NHIF covered >60% of costs, while the gap was mainly due to deductions.	Highly inadequate – only 21% of providers said ICHF payments covered >80% of service costs.	Inadequate in urban facilities, and somehow adequate in rural facilities; but mostly disburse amount per ceiling identified.
Payment predictability	More predictable due to fixed reimbursement rates and somehow timely payments.	Unpredictable due to unclear formula and delayed payments. Only 14.4% of providers knew the formula.	Unpredictable in terms of timing for disbursement and moderate knowledge on adjustors; 48.3% of providers knew the capitation formula.
Service coverage	Broader range of services, including high-cost services like surgery and emergencies.	Basic PHC services up to regional level, which perceived as limited.	Basic PHC services, but indirectly covering other services through operation costs and drugs.
Adherence to payment schedules	Fluctuating adherence within 60 days: 63% of providers experienced delays.	Poor adherence to monthly: 80% of providers experienced delays.	Weak adherence to quarterly: 53% of providers reported delays up to 2 quarters.
Timeliness of payments	Average delay of 3.1 months, relatively better to other PPMs.	Longest delays: average of 5.5 months.	Delays averaged 4.5 months; better than ICHF but worse than NHIF.
Accountability & reporting burden	Requires claim submission (hard & soft copies) & verification; perceived complex & time-consuming.	Requires claim submission & verification, perceived heavy and burdensome.	Lighter reporting requirements, mainly routine DHIS2 data, which perceived easier to providers.
Performance-based adjustments	No explicit performance adjustor, but implicitly incentivising provision of more services.	Considered in capitation formula (utilisation), but with limited clarity in calculation.	Considered in capitation formula (utilisation & drug availability), but with limited clarity in calculation.

Contribution to provider revenue: NHIF fee-for-service remains the most significant and reliable contributor to facility revenue among both public and private providers, enabling them to sustain a broad range of services. Providers described NHIF as “a key source that keeps services running.” In contrast, ICHF capitation contributes minimally due to implementation and enrolment challenges, with some providers noting it “does not bring enough revenue to plan anything substantial.” HSBF capitation is a major source of financing for many PHC facilities—particularly in rural areas—where government transfers form the core operational budget.

Adequacy of payment rates: Across all PPMs, providers perceived payment amounts as inadequate to cover service costs, though reasons differed by PPMs. For NHIF fee-for-service reimbursement were seen partially inadequate. Inadequacy was linked to deductions during post-claim audits, which are mainly due to limited compliance in claim submission after NHIF quality and compliance control. The inadequacy was confirmed by quantitative data, since 73.2% of providers said that NHIF fee-for-service covered more than 60% of service costs (Table 7).

“These deductions are necessary to ensure that healthcare providers comply with established protocols and prevent misuse of resources. I viewed audits and subsequent deductions help maintain the integrity of the system, reduce fraudulent activities, and ensure that only legitimate, quality services are reimbursed” (Purchaser-NHIF Official, KII)

ICHF capitation was highly inadequate, since only 20.5% of providers said ICHF covered over 80% of service costs, while 46.3% reported coverage below 60% (Table 7). For HSBF capitation, inadequacy was reported more strongly in urban facilities, where payments were viewed as too small compared to other PPMs.

“Most PHC facilities’ operational funds come from HSBF, but it is inadequate to cover the cost of services. Facilities therefore turn to sources they can generate themselves, like user fees and reimbursements from NHIF and ICHF” (Purchaser – Ministry Official, KII).

Although co-payments can help address inadequate payments and moral hazard behaviours, providers’ views were mixed. Some providers perceived beneficial like promoting flexibility and continuity of care, preventing moral hazard, and addressing market fluctuations. While others viewed it as a financial barrier, especially for low-income individuals, which potentially contradicts health insurance's goal of equitable access. Quantitative data showed only 23.3% and 47.5% of providers preferred co-payments for NHIF and ICHF, respectively (Table 7). This indicated low acceptability of co-payments, especially for NHIF.

Payment predictability: NHIF fee-for-service is regarded as relatively predictable because reimbursement rates are fixed, and the system for processing claims is well-established. However, deductions due to errors in claim submissions are unpredictable, which introduced some level of uncertainty.

ICHF capitation is the least predictable, partly because few providers understand the formula (base amount and adjustors) and because of frequent payment delays. One provider remarked that “we do not know how ICHF amounts are calculated.” This was supported with quantitative data: only 14.4% of ICHF providers reported knowing the formula used to determine capitation payments, compared to 48.3% of providers knowing the capitation formula for HSBF (Table 7). Purchasers acknowledged the limited clarity on ICHF capitation payment formula, explaining

that since 2021, the ICHF scheme transitioned from a prospective to a retrospective capitation model, and kept only a utilization adjustor (dropping catchment size and enrolment).

HSBF capitation is unpredictable in terms of timing for disbursement, and a few providers report limited clarity on formula adjustors, which reduces their ability to anticipate disbursement amounts.

Service coverage: NHIF fee-for-service offers the broadest service package, ranging from outpatient and inpatient care to surgeries, diagnostics, and emergency services, enabling providers to deliver comprehensive care.

“Specialised and complex services like surgeries or NCD treatments require specific resources and expertise, making them unsuitable for capitation but align more with fee-for-service” (Provider- In charge, IDI)

ICHF capitation offers a narrower PHC-oriented package that providers view as insufficient relative to community expectations. HSBF capitation covers core PHC operations and indirectly supports other services through financing essential medicines, utilities, and supplies.

Adherence to payment schedules: NHIF’s adherence to reimbursement after claim submission fluctuates within 60 days, with a majority of provider (63.5%) reporting delays. There is also limited awareness on payment schedule, for example, about 45.3% and 22.9% of providers reported monthly and quarterly payment schedules for NHIF (Table 7).

“NHIF fee-for-service reimbursement is supposed to be within 30 days, or maybe around 30 to 60 days after claim submission, and mostly it does. But sometimes it takes more than two to three months” (Provider -In charge, IDI)

ICHF capitation payments are rarely made within the expected monthly schedule, and delays are common and prolonged, often disrupting service continuity. Survey data shows 79.8% of providers experienced delays. Also, ICHF payment schedule is unclear to most providers – 18.8% of providers reported monthly, quarterly by 19.3%, while 50.2% of providers said there is no uniform payment schedule (Table 7).

“We’re not sure if it’s monthly or quarterly. Sometimes payments don’t come regularly, and it’s hard to know what the actual schedule is.” (Provider-In charge, IDI)

HSBF capitation also experiences weak adherence to quarterly disbursement timelines, with a few providers reporting delays spanning up to two quarters. Other the majority, 74.1% of providers, confirmed HSBF pays on quarterly basis (Table 7).

Timeliness of payments: Majority of providers reported delays in receiving payments across all PPMs, although the length of delays varied. Quantitative data showed 79.8% of providers reported delays for ICHF, 62.5% for NHIF, and 52.6% for HSBF. The reported average delays were 5.5 months for ICHF, 3.1 months for NHIF and 4.5 months for HSBF (Table 7). Although NIHF fee-for-service largely perceived timely, the corresponding payments still delayed, especially when claims are piled up.

ICHF capitation has the longest delays, averaging more than five months, which greatly undermines facility planning and procurement. One provider stated that *“ICHF delays make it difficult to run services smoothly.”*

“The last time we were paid [ICHF] was in October 2023, now it is March, but they are supposed to process claims monthly.” (Provider-ICHF Coordinator, Group interview)

HSBF payment delays fall between NHIF and ICHF, creating operational challenges but not as severely as ICHF.

“Capitation for HSBF is supposed to be paid quarterly. But when it delays for two quarters, payments are done in lump sum at once. This puts pressure in spending within a short period before the financial year ends, and limits the timely execution of the planned activities.” (Provider-In charge, IDI)

Accountability and reporting burden: NHIF fee-for-service places a heavy reporting burden on facilities through detailed claims submissions, verification checks, and both hard- and soft-copy documentation. Quantitatively, the complexity of claim submission process was confirmed by 18.4% of providers, with an average level of complexity at 7 on a scale of 1 to 10 (Table 7).

ICHF capitation has similar administrative requirements, which many providers perceive as time-consuming and cumbersome. Survey data showed a few providers (26.5%) confirmed that the claim submission process for ICHF is complex, with an average level of complexity at 7.1 on a scale of 1 to 10 (Table 7).

HSBF capitation, by contrast, requires mainly routine DHIS2 utilisation reporting and basic financial documentation, resulting in a comparatively lighter reporting burden.

“With HSBF, it’s not too complicated. We record service numbers in the register, then into the DHIS2.” (Provider-In charge, IDI)

Performance-based adjustments: Many providers and purchasers expressed positive views about performance requirements, noting their role in promoting accountability and improving performance. However, some providers also raised concerns about the fairness and practicality of some performance metrics or service utilization indicators.

“Meeting targets like early antenatal visits, facility deliveries, or postnatal attendance is difficult, sometimes patients don’t come due to cultural beliefs or seasonal activities. It looks like we are underperforming when actually it’s beyond our control.” (Provider-In charge, Group Interview).

NHIF fee-for-service does not have explicit performance-based incentives, though its structure implicitly rewards higher service utilisation. ICHF capitation includes utilisation-based adjustments in the capitation formula, but these mechanisms are poorly understood by providers, limiting their impact. HSBF capitation incorporates utilisation and drug availability as performance criteria, yet providers often lack feedback on how these metrics influence disbursements.

Table 7: Provider experiences with payment methods from provider survey

Features of provider payment methods	Fee-for service		Capitation			
	NHIF		ICHF		HSBF	
	(n=245)		(n=223)		(n=228)	
Share of service costs covered by the scheme on average						
(80-99%)	52	30.2%	10	4.9%		
(60-80%)	74	43.0%	23	11.2%		
(40-60%)	35	20.4%	62	30.2%		
(20-40%)	11	6.4%	68	33.2%		
(<20%)	–	–	42	20.5%		
Preferred co-payments (=1 yes)	57	23.3%	106	47.5%		
Providers know the reimbursement/ allocation formula (=1 yes)			32	14.4%	110	48.3%
Payment schedule for PPM by scheme						
Monthly	111	45.3%	42	18.8%	5	2.2%
Every 2 months	44	17.9%	13	5.8%	7	3.1%
Quarterly	56	22.9%	43	19.3%	169	74.1%
Bi-annually	1	0.4%	8	3.6%	23	10.1%
Annually			5	2.2%	3	1.3%
Not uniform	33	13.5%	112	50.2%	21	9.2%
Encounter payment delays	153	62.5%	178	79.8%	120	52.6%
Payment delay in months those experienced, mean [SD]	153	3.1 [1.4]	178	5.5 [3.4]	120	4.5 [2.1]
Complex process of submitting claims (=1 yes)	45	18.4%	59	26.5%		
Rating complexity of submission (scale 1-10), mean [SD]	45	7.0 [1.9]	59	7.1 [2.8]		

4.3. WP3: Provider preferences for capitation design attributes in Tanzania

4.3.1. Characteristics of healthcare workers

Table 8 presents the socio-demographic and professional characteristics of the 245 healthcare workers who participated in the study. Slightly more than half were male (53.1%), and a majority were married (67.8%). Only 18.8% were working in their native districts. The mean age of participants was 35 years (SD=8.3), with most falling within 30–39 age group (54.3%) and under 30 years (24.5%). The average work experience was 4.7 years, indicating a relatively early- to mid-career workforce. In terms of cadre, nurses were the majority (38.0%), followed by clinical officers (36.3%), while medical officers/specialists were 9.8%. A few respondents (22.5%) were facility in-charges. Most healthcare workers were involved in outpatient care (67.4%), with just over half working in inpatient services (51.8%), but a smaller group (9.0%) were in support units. Regarding education, the majority had attained college-level education (75.9%), followed by 15.1% with university degrees, and very few had secondary (7.8%) or primary education (1.2%).

Table 8: Healthcare workers characteristics (n=245)

Health worker characteristics	n	%	Mean [SD]
Male	130	53.1%	
Married	166	67.8%	
Native district	46	18.8%	
Age (in years)	245		35 [8.3]
Age group (<30 years)	60	24.5%	
Age group (30-39 years)	133	54.3%	
Age group (40-49 years)	31	12.6%	
Age group (50+ years)	21	8.6%	
Work experience (in years)	245		4.7 [4.8]
Providers' cadre			
Medical Officer/Specialist	24	9.8%	
Clinical Officer	89	36.3%	
Nurses	93	38.0%	
Other (e.g., lab, dentist, pharmacist)	39	15.9%	
Facility in-charge (=1 yes)	55	22.5%	
Providers' department (multiple responses)			
Outpatient Department (OPD)	165	67.4%	
Inpatient Department (IPD)	127	51.8%	
Support units	22	9.0%	
Education level			
Primary education	3	1.2%	
Secondary education	19	7.8%	
College education	186	75.9%	
University education	37	15.1%	

Notes: SD=Standard Deviation

4.3.2. Provider preferences for capitation attributes

Table 9 shows results from model 1 (with categorical percentage of bonus payment), capturing the non-linear effect of categorical bonus payment. Compared to inadequate funding, providers significantly preferred “adequate” payments ($\beta=0.66$, $p<0.001$) and, to a lesser extent, “inadequate with co-payment” ($\beta=0.49$, $p<0.001$), compared to “inadequate” payments. For services covered, compared to basic outpatient care (OPD) alone, the “standard” package (OPD + lab) was significantly preferred ($\beta=0.78$, $p<0.001$), and even stronger preferences were seen for “comprehensive” (OPD + lab + drugs) and “full” (includes inpatient services) packages, each with a coefficient of $\beta=1.31$ ($p<0.001$). Payment schedule and timeliness also influenced provider preferences. Providers significantly preferred monthly ($\beta=1.08$, $p<0.001$) and quarterly ($\beta=0.77$, $p<0.001$) payments over biannual disbursements. Similarly, both “timely” ($\beta=0.83$, $p<0.001$) and “short delay” ($\beta=0.55$, $p<0.001$) scenarios were preferred to long payment delays (>3 months).

Compared to no performance-based incentives, provider utility increased significantly with each level of additional bonus: 10% ($\beta=0.52$), 20% ($\beta=0.99$), and 30% ($\beta=1.20$), all with $p<0.001$.

Table 9: Healthcare workers preferences for capitation payment attributes

Capitation attributes & levels	Model 1: Categorical bonus payment thresholds	
	Mean β_i (SE)	SD
Adequacy of payment amount		
Adequate	0.66 (0.10) ***	0.71***
Inadequate & with co-payment	0.49 (0.11) ***	0.87***
Inadequate (reference)		
Services covered by payments		
Basic (OPD) (reference)		
Standard (OPD + Lab)	0.78 (0.12) ***	0.11
Comprehensive (OPD + Lab + Drugs)	1.31 (0.15) ***	0.09
Full (OPD + Lab + Drugs + IPD)	1.31 (0.18) ***	1.29***
Payment schedule		
Monthly	1.08 (0.11) ***	0.57***
Quarterly	0.77 (0.08) ***	0.31*
Bi-annually (reference)		
Timeliness of payment		
Timely	0.83 (0.12) ***	0.43***
Short delay (1-3 months)	0.55 (0.09) ***	0.02
Long delay (>3 months) (reference)		
Additional payment for high-performing facilities		
0% bonus (reference)		
10% bonus	0.52 (0.08) ***	-0.02
20% bonus	0.99 (0.12) ***	0.66***
30% bonus	1.20 (0.13) ***	0.59***
Constant	0.14 (0.07) *	
Number of respondents	245	
Number of observations	5888	
Log likelihood	-1581.7878	
Wald Chi-square	340.71	
Prob > Chi-square	0.000	
Number of facility clusters	84	

Notes: Mixed logit model results estimated using Stata's mix logit command and 500 Halton draws; Mean coefficient (β_i) represents the mean relative utility of each attribute-level conditional on other attributes in a choice set, while the Standard Deviation (SD) of random coefficients reflects the degree of heterogeneity among respondents in the utility of a given attribute; SE= Standard Error; *** denotes significance at 1%, ** at 5%, and * at 10% level.

4.3.3. Relative importance of capitation payment attributes

The attribute of service to be covered was the most influential attribute in provider preferences of capitation payment attributes, accounting for 31.8% of the total variation (Table 10). Payment schedule followed as the second most important attribute (22.2%). Performance-based bonus

payments ranked third (19.0%), followed by adequacy of payment which played a significant role (16.5%) and underscoring the importance of sufficient capitation amounts. Timeliness of payment, although still relevant for implementation, was the least influential among the five attributes, contributing 10.5% to the total change.

Table 10: Partial log-likelihood analysis of ranking relative importance of attributes

Attribute dropped	Log likelihood	Partial Effect	Relative effect (% of total change)	Cumulative (%)	Order of impact
None (full model)	-1581.788				
Services covered	-1693.619	-111.831	31.8%	31.8%	1
Payment schedule	-1659.840	-78.052	22.2%	54.0%	2
Performance-based bonus	-1648.413	-66.625	19.0%	73.0%	3
Adequacy of payment	-1639.852	-58.064	16.5%	89.5%	4
Timeliness of payment	-1618.533	-36.745	10.5%	100.0%	5

4.3.4. Subgroup analysis for preference heterogeneity

The mixed logit subgroup analysis revealed notable heterogeneity in healthcare providers' preferences for capitation payment attributes across three dimensions: level of care, location/region, and healthcare worker job position. Despite the overall providers' preferences for better capitation designs, the strength of these preferences varied by subgroup (Table 11).

By level of care, providers in both higher-level facilities (hospital and health centre) compared to dispensary expressing slightly stronger preferences for adequate capitation amounts and comprehensive service coverage. For example, providers at hospitals/health centres preferred adequate payments ($\beta=0.686$) and full-service coverage ($\beta=1.560$), while those at dispensaries reported slightly lower but still strong values ($\beta=0.639$ and $\beta=1.121$, respectively). Frequent payments (monthly or quarterly) were more strongly preferred at dispensaries than higher level facilities, while preference for timely and short delay were stronger in hospitals and health centres than dispensaries. The preference for performance-based bonuses, across all shares of performance, was relatively higher for higher level facilities than dispensaries.

Regional differences between Singida and Manyara were also evident. Providers in Singida consistently reported higher preference weights for nearly all attributes, including adequate payment ($\beta=0.818$) and full-service coverage ($\beta=1.562$), compared to those in Manyara ($\beta=0.628$ and $\beta=1.168$, respectively). For co-payment arrangements, providers' tolerance based on magnitude and level of significance was much lower in Manyara ($\beta=0.294$, $p<0.10$) than in Singida ($\beta=0.754$, $p<0.001$), suggesting regional variation in attitudes toward user cost-sharing mechanisms. Unlike for quarterly payment schedule, monthly payments were strongly preferred in Manyara than Singida. Both regions, however, valued performance-based incentives, particularly at the 30% bonus level.

In terms of providers' position at facility, the facility in-charges expressed notable stronger preferences for all attributes than normal staff, reflecting managerial responsibilities of in-charges. For example, they showed very high utility for full-service coverage ($\beta=12.181$, $p<0.001$) and monthly payments ($\beta=7.132$, $p<0.001$), along with strong support for co-payment options ($\beta=4.452$, $p<0.005$) and higher performance bonus threshold of 30% ($\beta=8.598$, $p<0.005$). Normal

staff reported more moderate but still positive preferences, indicating shared priorities but differing intensities.

Table 11: Sub-group analysis for preference heterogeneity

Capitation attributes & levels	Level of care		Location/region		Position at facility	
	Hospital & Health centre	Dispensary	Singida	Manyara	In-charge	Normal staff
Adequacy of payment	Mean β_i	Mean β_i	Mean β_i	Mean β_i	Mean β_i	Mean β_i
Adequate	0.686***	0.639***	0.818***	0.628***	0.990	0.677***
Inadequate + co-payment	0.510**	0.501***	0.754***	0.294*	4.452**	0.348***
Inadequate (reference)						
Services covered						
Basic (OPD) (reference)						
Standard	0.713***	0.894***	0.923***	0.694***	5.857***	0.684***
Comprehensive	1.441***	1.239***	1.459***	1.254***	7.715***	1.209***
Full	1.560***	1.121***	1.562***	1.168***	12.181***	1.124***
Payment schedule						
Monthly	1.002***	1.221***	1.047***	1.126***	7.132***	1.019***
Quarterly	0.694***	0.899***	0.945***	0.684***	6.369**	0.672***
Bi-annually (reference)						
Timeliness of payment						
Timely	0.952***	0.775***	0.931***	0.812***	4.689**	0.758***
Short delay	0.709***	0.396***	0.646***	0.521***	1.679*	0.572***
Long delay (reference)						
Performance-based pay						
0% bonus (reference)						
10% bonus	0.676***	0.401***	0.659***	0.451***	2.828**	0.463***
20% bonus	1.114***	0.956***	1.148***	0.931***	8.139**	0.759***
30% bonus	1.268***	1.197***	1.252***	1.185***	8.598**	1.035***
Constant	0.054	0.238***	0.222**	0.088	1.848**	0.068
Number of respondents	123	122	122	123	55	190
Number of observations	2,952	2,928	2,928	2,952	1,320	4,560
Log likelihood	-787.938	-782.172	-772.465	-798.793	-301.704	-1250.989

4.3.5. Concluding summary for WP3

Overall, PHC providers were generally supportive of capitation as a payment model, but only when it is well designed—adequate, frequent, timely, and linked to clear performance incentives. PHC providers expressed strong preferences for several key features of capitation. First, they favoured adequate payment levels, preferring reimbursement rates that fully cover service delivery costs, or—where this is not feasible—the option to allow client co-payments to address funding gaps. Second, providers preferred broad service coverage under capitation, including outpatient and inpatient care, essential medicines, and diagnostic tests. Third, they valued a frequent payment schedule, with monthly or quarterly payments viewed as most

supportive of smooth facility operations. Fourth, timely disbursement was essential, with providers emphasising that funds should be released according to the agreed payment schedule and without delays. Finally, providers preferred capitation designs that include performance incentives, particularly models that apply performance-based adjustments to reward quality and good performance, provided that indicators are fair, transparent, and realistically aligned with their working conditions. However, preferences were not uniform: they varied across facility levels and cadres, with district hospitals, health centres, and dispensaries showing different priorities regarding capitation attributes. Notably, facility in-charges expressed stronger preferences for improved capitation design than other staff, reflecting their central role in managing facility resources and accountability.

4.4. WP4: Effects of PPMs on service quality and equity in Tanzania

4.4.1. Characteristics of respondents/ clients

Table 12 presents demographic and socioeconomic characteristics of 475 respondents (patients/ clients). Most clients were female (84.2%), married (77.3%), and had attended school (89.1%). Among those who attended school, the majority completed primary education (54.3%), followed by secondary education (25.5%) and college/ university education (9.3%). The average age was 35 years [SD=14.9], with most clients aged 20–39 years (60.3%). In terms of occupation, over half were farmers (52.8%), with a small proportion formally employed (10.7%). Households were predominantly male-headed (85.5%), with an average size of five members. About 48% of clients were covered by health insurance. Approximately 27% of clients brought children for care, with an average child age of 2.6 years. The majority of accompanying adults were mothers (86.2%), followed by fathers (11.5%).

Table 12: Characteristics of respondents/ clients (n=475)

Respondent/ client characteristics	%	Mean [SD]
Female	84.2%	
Married	77.3%	
Attended school	89.1%	
No education	10.9%	
Primary education	54.3%	
Secondary education	25.5%	
College/ university education	9.3%	
Age in years		35.1 [14.9]
Age (<20 years)	9.3%	
Age (20-29 years)	37.1%	
Age (30-39 years)	23.2%	
Age (40-49 years)	11.8%	
Age (50-59 years)	9.5%	
Age (≥60 years)	9.3%	
Occupation status		
Formal sector worker	10.7%	
Farmer	52.8%	
Self-employed	17.9%	

Domestic workers	9.1%	
Student/retired/unemployed	9.5%	
Male household head	85.5%	
Client with health insurance	47.8%	
Household size, mean [SD]		5.0 [2.2]
Small household (1-5 members)	62.9%	
Large household (6+ members)	37.1%	
Respondent who brought a child	27.4%	
Child age in years		2.6 [1.2]
Respondent-child relationship		
Mother	86.2%	
Father	11.5%	
Guardian/caregiver	2.3%	

4.4.2. Effect of PPM on service experience and access

Across the sample of insured clients, the average waiting time was 42.8 minutes, the average consultation time was 13.3 minutes, and 4% of clients paid for services, with an average payment of TZS 458.15 (Table 13). These indicators were largely similar between NHIF fee-for-service and ICHF capitation clients, except that NHIF fee-for-service clients reported slightly fewer facility visits ($p < 0.001$) and shorter waiting times (14.5 minutes less, $p < 0.10$) compared to ICHF capitation clients. However, adjusted regression analysis revealed no statistically significant effects of payment method on any service experience indicators.

Table 13: Effect of PPM on service experience

Variables about service experience and healthcare access	Total	Health insurance type or payment method		Effect of Fee-For-Service (NHIF) (Adjusted regression)	
		NHIF (Fee-for-service)	ICHF (Capitation)	N	β (p-value)
	(n=227)	(n=139)	(n=88)		
Facility visits in last 30 days (n)	0.8 [0.8]	0.7 [0.8] ***	0.9 [0.8]	227	-0.08 (0.448)
Waiting time (mean min)[SD]	42.8 [51.2]	35.5 [40.4]*	54.3 [63.2]	227	-14.5 (0.131)
Consultation time (mean min)[SD]	13.3 [10.3]	12.8 [9.3]	14.2 [11.8]	227	-2.5 (0.256)
Paid for service today (%)	4.0%	3.6%	4.5%	227	-3.6% (0.263)
Amount paid (mean TZS)[SD]	458.15 [2548.95]	316.55 [1809.94]	681.82 [3405.69]	227	-498.50 (0.304)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level; t-test used no insurance as reference groups; The effect of PPM was estimated using multivariate regression analysis, using ICHF as a reference category. The regression model adjusted for the following client level covariates: age, sex, education, occupation, marital status, household head gender, household size, household socioeconomic status and service type.

4.4.3. Effect of PPM on drug prescription and interpersonal quality of care

Across the sample, 92.9% of insured clients were prescribed drugs, with an average of 2.7 drug types prescribed (Table 14). Among them, 81.9% obtained the prescribed medications, while 20.4% were required to purchase drugs outside the facility. Compared to ICHF capitation clients, NHIF fee-for-service clients were more likely to be prescribed drugs ($p<0.10$), significantly more likely to obtain them ($p<0.001$), and less likely to purchase them externally ($p<0.01$).

Adjusted regression analysis confirmed a significant positive effect of fee-for-service on drug access—NHIF clients were 27.3 percentage points more likely to obtain prescribed drugs ($p=0.008$) and 21.5 percentage points less likely to purchase them externally ($p=0.010$). However, there were no significant differences in the number of drug types prescribed.

Regarding interpersonal quality, nearly half of the clients asked questions during their visits (45.8%), and satisfaction with provider responses was nearly universal. However, adjusted regression results showed a borderline negative effect of fee-for-service on the likelihood of clients asking questions ($p<0.10$), with no significant effect of payment method on satisfaction with provider responses.

Table 14: Effect of PPM on drug prescription and interpersonal quality

Variables about drug prescription	Total	Health insurance type or payment method		Effect of Fee-For-Service (NHIF) (Adjusted regression)	
		NHIF (Fee-for-service)	ICHF (Capitation)	N	β (p-value)
	(n=227)	(n=139)	(n=88)		
Prescribed drugs today (%)	92.9%	95.7%*	88.6%	227	6.3% (0.238)
No. of drug types prescribed (n)	2.7 [1.0]	2.7 [1.0]	2.6 [1.1]	211	-0.1 (0.677)
Prescribed drugs obtained (%)	81.9%	89.5%***	69.2%	211	27.3% (0.008) ***
Prescribed drugs to purchase (%)	20.4%	14.3%**	30.8%	211	-21.5% (0.010) ***
Questions and answers					
Clients asked question (%)	45.8.7%	46.8%	44.3%	227	-28.2% (0.099) *
Clients satisfied with answer (%)	99.0%	98.5%	100.0%	104	1.9% (0.508)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level; t-test used no insurance as reference groups; The effect of PPM was estimated using multivariate regression analysis, using ICHF as a reference category. The regression model adjusted for the following client level covariates: age, sex, education, occupation, marital status, household head gender, household size, household socioeconomic status and service type.

4.4.4. Effect of PPM on service quality gaps and maternal care quality

Reported service quality gaps were low: 10.1% of clients experienced unnecessary care, 9.7% missed necessary services, and 7.9% were referred to get service outside the facility (Table 15).

Both unadjusted and adjusted analyses showed no significant differences in these indicators between NHIF fee-for-service and ICHF capitation clients. For maternal care, ANC clients reported an average of 2.5 visits, and staff kindness was rated highly at 9.1 out of 10. Again, neither unadjusted nor adjusted analyses found significant differences between the two payment groups in the number of ANC visits or perceived staff kindness.

Table 15: Effect of PPM on service quality gaps and maternal care quality

Variable about service quality gaps and maternal care quality	Total	Health insurance type or payment method		Effect of Fee-For-Service (NHIF) (Adjusted regression)	
		NHIF (Fee-for-service)	ICHF (Capitation)	N	β (p-value)
	(n=227)	(n=139)	(n=88)		
Staff provided unnecessary care (%)	10.1%	10.8%	9.1%	227	-5.5% (0.474)
Missed necessary service (%)	9.7%	10.8%	8.0%	227	-0.3% (0.961)
Referred service out (insured) (%)	7.9%	6.5%	10.2%	227	-8.4% (0.139)
Antenatal care (ANC) aspects	(n=26)	(n=16)	(n=10)		
ANC total visits, mean [SD]	2.5 [1.3]	2.4 [1.4]	2.7 [1.2]	26	-4.5 (0.127)
ANC staff kindness (1-10), mean [SD]	9.1 [1.4]	9.1 [1.3]	9.0 [1.6]	26	-0.6 (0.906)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level; t-test used no insurance as reference groups; The effect of PPM was estimated using multivariate regression analysis, using ICHF as a reference category. The regression model adjusted for the following client level covariates: age, sex, education, occupation, marital status, household head gender, household size, household socioeconomic status and service type.

4.4.5. Effect of PPM on perceived and technical quality of care

Perceived quality of care was generally high across insured clients, with interpersonal relationships rated at 93.8%, facility trust at 91.3%, and positive staff perceptions at 90.5% (Table 16). The provision of health promotion advice was lower (41.4%) across the sample. Compared to ICHF capitation clients, NHIF fee-for-service clients reported slightly higher trust in their facilities (95.5% vs. 91.6%, $p < 0.05$), and provision of health promotion advice (44.8% vs. 36.7%, $p < 0.05$), but reported slightly lower perception on staff (91.1% vs. 93.3%, $p < 0.05$). Adjusted regression analysis confirmed a borderline significant positive effect of NHIF fee-for-service on facility trust (4.9 percentage points higher, $p = 0.063$) compared to ICHF capitation, but found no significant differences in other perceived quality domains.

In terms of technical quality, scores for content of care adherence were considerably lower at 59.4% for ANC services and 41.4% for OPD services. These technical quality indicators did not differ significantly between NHIF fee-for-service and ICHF capitation clients in either unadjusted or adjusted analyses.

Table 16: Effect of PPM on perceived and technical quality indices

Quality of care variable	Total	Health insurance type or payment method		Effect of Fee-For-Service (NHIF) (Adjusted regression)	
		NHIF (Fee-for-service)	ICHF (Capitation)	N	β (p-value)
Indices for general services (0-100%)	(n=227)	(n=139)	(n=88)		
Interpersonal relationship (6 items)	93.8%	96.3%	95.3%	227	-1.5% (0.722)
Clients' facility trust (5 items)	91.3%	95.5%**	91.6%	227	4.9% (0.063) *
Clients' perception on staff (7 items)	90.5%	91.1%**	93.3%	227	-0.8% (0.632)
Health promotion advice (6 items)	41.4%	44.8%**	36.7%	227	2.7% (0.602)
Indices for specific services (0-100%)					
ANC content of care (20 items)	59.4%	68.1%	64.5%	26	-5.1% (0.930)
OPD content of care (10 items)	41.4%	45.9%	47.2%	45	-21.1% (0.247)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level; t-test used no insurance as reference groups; The effect of PPM was estimated using multivariate regression analysis, using ICHF as a reference category. The regression model adjusted for the following client level covariates: age, sex, education, occupation, marital status, household head gender, household size, household socioeconomic status and service type.

4.4.6. Qualitative insights

Qualitative findings highlighted notable differences in client experiences between NHIF (fee-for-service) and ICHF (capitation) clients across several dimensions of care. Waiting times were widely reported as long across both groups, though NHIF clients—particularly in urban facilities—described experiencing even longer queues. As one NHIF client noted, “It was too long... with a child.”

Clients also described differences in the comprehensiveness of drug prescriptions, with NHIF clients generally feeling that providers prescribed all necessary medicines, while ICHF clients perceived more limitations. These perceptions were reinforced in reports of access to medicines and diagnostic tests, where NHIF clients more frequently indicated that they were able to obtain what was required, compared to the more constrained experiences of ICHF clients.

Client-provider interactions also varied by payment scheme. NHIF clients under fee-for-service more often described interactions as respectful, private, and accompanied by clear explanations— “They listened and guided me,” as one client shared. In contrast, some ICHF clients felt their encounters were brief and lacked communication, with one remarking, “They didn’t explain... just gave tablets.”

Overall, these insights suggest that payment mechanisms may indirectly shape the nature of client experiences, with fee-for-service associated with more positive perceptions of access and communication relative to capitation.

4.4.7. Equity effects

The analysis revealed that while NHIF's fee-for-service model was associated with improved drug access and higher trust in facilities overall, these benefits were not shared equally across socioeconomic groups of clients. Poorer NHIF clients experienced notable disadvantages in their care experience (data not shown). They received shorter consultation times (–4.27 minutes), less likely to ask questions during consultations (–30.3%), and were less likely to recommend the facility to others (–10.8%). Although some of these differences were marginally significant, the pattern consistently points to inequities in how care is delivered and experienced by poorer clients, even within the same payment scheme. These findings highlight the need for targeted measures to ensure that payment reforms translate into equitable improvements in patient experience across all socioeconomic groups.

4.4.8. Concluding summary for WP4

Overall, the comparison of client experiences under fee-for-service (NHIF) and capitation (ICHF) shows that differences in PPMs did not translate into major variations in the experience or quality of care received. Waiting and consultation times were nearly identical across the two schemes, suggesting that payment modality in Tanzania had limited influence on workflow or provider responsiveness. However, NHIF clients under fee-for-service reported better access to prescribed medicines, indicating that reimbursement mechanisms through fee-for-service may influence drug prescription and availability at facilities.

Perceived quality gaps were low and comparable between schemes, with fewer than 11% of clients reporting missed or unnecessary services. Trust in facilities was higher among NHIF clients, potentially reflecting broader benefits coverage and more predictable service access. Despite these perceptions, adherence to clinical care standards—particularly ANC and OPD content—remained suboptimal and similarly low across both schemes, highlighting a system-wide quality challenge beyond payment method design.

Overall, while fee-for-service showed some advantages in drug access and client trust, the findings suggest that neither payment method substantially improved the technical quality of care, pointing to the need for strengthened quality assurance mechanisms alongside payment reforms.

5. Policy recommendations

Policy Recommendations (WP2): Provider and Purchaser Experience with Existing PPMs

1. **Align payment rates with actual service costs:** Payment rates—particularly under capitation (ICHF, HSBF)—should be reviewed and adjusted to better reflect the true cost of delivering services. This will reduce financial deficits at facilities and support sustained service readiness.
2. **Improve provider payment predictability and transparency:** Capitation formulas and reimbursement rules should be clearly communicated to providers. Increasing transparency will enhance provider understanding, strengthen planning capacity, and reduce uncertainty at the facility level.
3. **Ensure timely and reliable fund disbursement:** Stronger enforcement of agreed payment schedules and streamlined claims and verification processes are critical. Timely payments will improve provider trust and ensure uninterrupted service delivery.
4. **Simplify and standardise reporting requirements:** Accountability and reporting systems across PPMs should be harmonised and simplified. Investments in provider capacity-building can help ensure compliance while reducing administrative burdens.
5. **Tailor performance incentives to local contexts:** Capitation adjustors and performance indicators should be fair, context-sensitive, and co-developed with providers. This will promote meaningful accountability and service improvements grounded in local realities.

Policy Recommendations (WP3): Provider Preferences for Capitation Design Attributes

1. **Engage providers in capitation design:** Provider perspectives should be systematically incorporated into the design of capitation models, including the selection of adjustors. This will build ownership, trust, and alignment with frontline operational needs.
2. **Incorporate equity and performance-related adjustors:** Capitation formulas should include context-specific adjustors—such as workload, remoteness, or service quality—to support fairness and incentivise improved performance.
3. **Guarantee timely and predictable disbursements:** Funds should be released according to the agreed schedule to enable effective service planning, maintain provider confidence, and ensure responsiveness to population needs.
4. **Expand the service package and ensure adequate rates:** Capitation rates should be set at levels that cover essential services, including medicines and diagnostics, to minimise service gaps and reduce out-of-pocket costs for clients.

Policy Recommendations (WP4): Effects of PPMs on Healthcare Quality

1. **Invest beyond payment methods to strengthen quality:** Improvements in payment systems must be accompanied by investments in drug supply chains, data quality and use, supervision, and accountability structures to meaningfully enhance service quality.

2. **Promote equity in access and trust:** Payment systems should be aligned with equity goals by ensuring adequate and timely financing for all populations. Equity-adjusted formulas can help channel more resources to underserved areas.
3. **Set fair, transparent, and motivating payment rates:** Payment rates should be clear, regularly reviewed, and supported by equity and performance adjusters to maintain provider motivation and foster quality care.
4. **Strengthen oversight of fee-for-service:** Robust verification, audit mechanisms, and monitoring systems are essential to mitigate risks of overuse, unnecessary care, and cost escalation inherent in fee-for-service models.

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7. Annexes

Annex Table: Healthcare workers preferences for capitation payment attributes

Capitation attributes & levels	Model 1: Categorical bonus payment thresholds		Model 2: Continuous bonus payment thresholds	
	Mean β_i (SE)	SD	Mean (SE)	SD
Adequacy of payment amount				
Adequate	0.66 (0.10) ***	0.71***	0.68 (0.10) ***	0.68***
Inadequate & with co-payment	0.49 (0.11) ***	0.87***	0.48 (0.11) ***	0.82***
Inadequate (reference)				
Services covered by payments				

Basic (OPD) (reference)				
Standard (OPD + Lab)	0.78 (0.12) ***	0.11	0.79 (0.11) ***	0.01
Comprehensive (OPD + Lab + Drugs)	1.31 (0.15) ***	0.09	1.27 (0.13) ***	-0.28
Full (OPD + Lab + Drugs + IPD)	1.31 (0.18) ***	1.29***	1.28 (0.18) ***	1.24***
Payment schedule				
Monthly	1.08 (0.11) ***	0.57***	1.09 (0.09) ***	-0.57***
Quarterly	0.77 (0.08) ***	0.31*	0.75 (0.08) ***	0.18
Bi-annually (reference)				
Timeliness of payment				
Timely	0.83 (0.12) ***	0.43***	0.79 (0.11) ***	-0.48***
Short delay (1-3 months)	0.55 (0.09) ***	0.02	0.48 (0.09) ***	0.05
Long delay (>3 months) (reference)				
Additional payment for high-performing facilities			0.04 (0.01) ***	0.03***
0% bonus (reference)				
10% bonus	0.52 (0.08) ***	-0.02		
20% bonus	0.99 (0.12) ***	0.66***		
30% bonus	1.20 (0.13) ***	0.59***		
Constant	0.14 (0.07) *		0.13 (0.07) *	
Number of respondents	245		245	
Number of observations	5888		5888	
Log likelihood	-1581.7878		-1588.3834	
Wald Chi-square	340.71		365.74	
Prob > Chi-square	0.000		0.000	
Number of facility clusters	84		84	

Notes: Mixed logit model results estimated using Stata's mix logit command and 500 Halton draws; Mean coefficient (β_i) represents the mean relative utility of each attribute-level conditional on other attributes in a choice set, while the Standard Deviation (SD) of random coefficients reflects the degree of heterogeneity among respondents in the utility of a given attribute; SE= Standard Error; *** denotes significance at 1%, ** at 5%, and * at 10% level.