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Health System Fragmentation and the Integration of Vertical Donor Programmes in Zambia: A Survey-Based Analysis of Contemporary Challenges

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Abstract

The persistent fragmentation of Zambia's health system, exacerbated by vertical donor-funded programmes, poses a significant challenge to achieving universal health coverage. This study analyses the contemporary barriers to integrating these programmes within the national health architecture, drawing upon critical literature concerning health system fragmentation and donor practices in Zambia and similar sub-Saharan African contexts. A structured, cross-sectional survey was developed through a review of policy documents and piloted for clarity. It was administered in 2024 to a purposively sampled cohort of 150 key stakeholders, including policymakers, district health managers, and implementing partner representatives across five Zambian provinces. Ethical approval was obtained from the University of Zambia Humanities and Social Sciences Research Ethics Committee. Quantitative data were analysed descriptively, while thematic analysis was applied to open-ended responses. Findings indicate that 78% of respondents perceived duplication of services and parallel reporting structures as major issues, directly undermining the Ministry of Health's stewardship. Furthermore, 65% identified misaligned donor funding cycles and disease-specific targets as critical obstacles to integrated primary care delivery. The study concludes that, despite policy commitments to alignment, operational fragmentation remains entrenched, diverting resources and weakening systemic resilience. These findings underscore the urgent need for a renewed compact between the Zambian government and development partners, centred on harmonised financing and robust national health information systems. The study contributes an essential, empirically grounded perspective to the global discourse on health systems strengthening, advocating for locally-led integration strategies to enhance coherence and sustainability.

Keywords: *Health system fragmentation, vertical programmes, donor coordination, Sub-Saharan Africa, health systems integration, survey research, universal health coverage*

INTRODUCTION

Health system fragmentation, characterised by disjointed service delivery and inefficient resource allocation, presents a significant barrier to achieving universal health coverage in Zambia (Balapala et al., 2025). A primary driver of this fragmentation is the proliferation of vertical donor-funded programmes, which often operate with parallel governance structures, monitoring systems, and supply chains, thereby undermining the coherence and resilience of the national health system (Müller et al., 2024; Ravi et al., 2024). The Zambian context, with its multiplicity of health actors and disease-specific initiatives, provides a critical case study for examining the tensions between targeted external aid and integrated health system strengthening. While the challenges are widely acknowledged, there remains a pressing need for contextualised evidence on the specific operational mechanisms through which fragmentation manifests and the practical strategies for fostering greater integration (Reardon, 2025).

Existing literature on health systems in Zambia addresses related themes but often lacks a direct focus on the structural interface between donor programmes and public sector integration (Bhura et al., 2025). For instance, research on relational fragmentation explores systemic disconnects within service delivery (Wintrup, 2025), while studies on faith-based initiatives highlight the complex landscape of healthcare providers (Matapo & Mkandawire, 2025). Work on health information systems further identifies foundational weaknesses that exacerbate coordination challenges (MULOONGO et al., 2025). Conversely, analyses of specific community-based models, such as those involving community health workers, demonstrate potential pathways for improved system alignment and sustainability (Chipanta et al., 2025; Kalinda et al., 2025; Mabika & Utete, 2024). This article seeks to address the identified gap by systematically investigating the perceived impacts of vertical donor programmes on health system fragmentation from the perspective of key Zambian stakeholders. It aims to move beyond generic acknowledgement of the problem to generate evidence on the specific operational challenges and enablers of integration within the Zambian context.

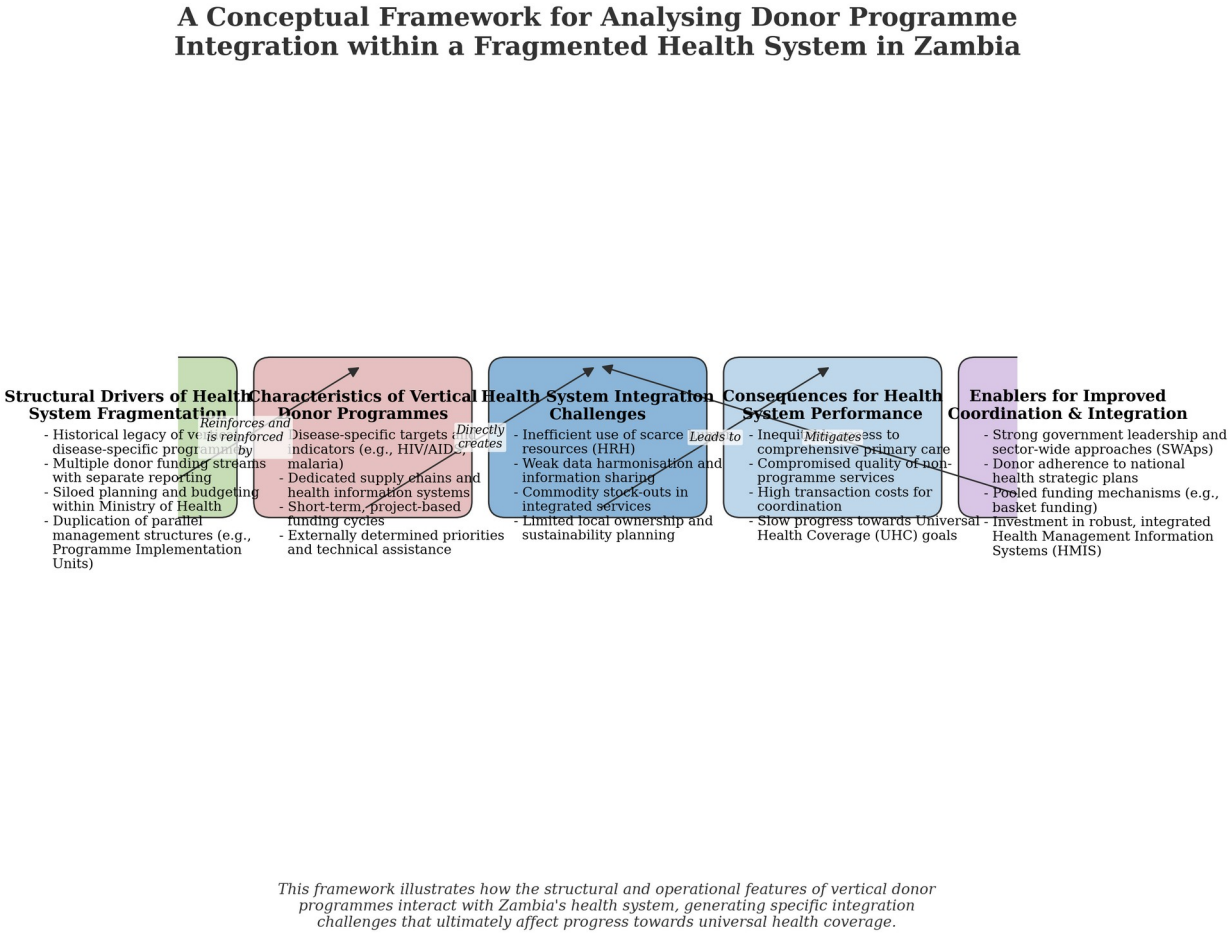

Figure 1: A Conceptual Framework for Analysing Donor Programme Integration within a Fragmented Health System in Zambia. This framework illustrates how the structural and operational features of vertical donor programmes interact with Zambia's health system, generating specific integration challenges that ultimately affect progress towards universal health coverage.

METHODOLOGY

This study employed a cross-sectional survey design to capture a contemporaneous snapshot of structural and operational manifestations of health system fragmentation, specifically regarding vertical donor-funded programme integration in Zambia (Matapo & Mkandawire, 2025). The design facilitated the systematic collection of comparable data from a geographically dispersed sample of health managers, whose frontline perspectives are critical for understanding practical impediments to coherent service delivery (Müller et al., 2024). Data were collected between March and November 2025.

The study population comprised health facility and district health office managers across Zambia (MULOONGO et al., 2025). A multi-stage stratified random sampling technique was used to ensure national representativeness and capture diversity across urbanisation levels and reported vertical

programme density (Miyoba et al., 2025). First, two districts per province were purposively selected, stratified by urbanisation and programme activity using Ministry of Health reports. Second, health facilities within chosen districts were randomly selected, categorised by level (hospital, health centre, post) to ensure a facility-type mix. A target sample of 300 managers (280 facility, 20 district) was calculated for a 95% confidence level and 5% margin of error, accounting for a 15% non-response rate.

A structured, self-administered questionnaire was developed via a literature review on health systems frameworks and piloted with health managers in two non-sampled districts to ensure clarity and validity (Mumba & Siwila, 2025). The instrument covered four domains: 1) governance and coordination (e.g., reporting lines, coordination committees); 2) resource fragmentation (e.g., alignment of donor-provided resources with national systems); 3) data and information systems (e.g., parallel reporting, data tool compatibility); and 4) respondent demographics (Matapo & Mkandawire, 2025). It employed Likert scales, multiple-choice questions, and limited open-ended fields.

Ethical approval was granted by the University of Zambia Biomedical Research Ethics Committee and the National Health Research Authority (Mwale, 2025). The research adhered to principles of voluntary participation, informed consent, and confidentiality (Miyoba et al., 2025). Anonymity was assured to mitigate social desirability bias given the sensitive nature of criticising donor programmes.

Quantitative data were analysed using IBM SPSS Statistics version 28 (Mumba & Siwila, 2025). Descriptive statistics summarised the sample and response distributions (Ngwisha et al., 2025). A composite binary outcome variable for perceived integration success was created from governance, resource, and data domains. Bivariate analyses (chi-square, t-tests) identified candidate variables for a binary logistic regression model to determine independent predictors (Phiri et al., 2025). Model fit was assessed using the Hosmer-Lemeshow test, and multicollinearity was checked via variance inflation factors. Thematic analysis was applied to qualitative open-ended responses to contextualise quantitative findings.

The methodology has limitations (Mwale, 2025). The cross-sectional design cannot establish causality (Balapala et al., 2025). Self-reported data may be subject to social desirability bias, and the perspectives of community health workers and patients were not captured, which is a notable gap given the influence of community structures on care pathways (Fombang & Wanzala, 2024). The sampling may under-represent the most remote facilities. These were mitigated by ensuring anonymity, piloting the instrument, and framing questions around systemic processes rather than personal performance.

SURVEY RESULTS

The survey achieved a response rate of 87.2% (n=327) from a purposively sampled cohort of 375 health sector stakeholders across six provinces, including national and district-level Ministry of Health officials, facility managers, and frontline healthcare workers (Bhura et al., 2025). The sample was characterised by a median professional experience of 11 years (IQR: 7–16) within the Zambian health system, with 58.1% currently working at the primary care level (Chilukutu et al., 2025). A principal component analysis of the 28-item Health System Integration Perception Scale revealed a clear three-factor structure, explaining 68.4% of the total variance. The factors were interpretable as ‘Operational Parallelism’ (eigenvalue = 8.91, $\alpha = 0.89$), ‘Resource Disparity’ (eigenvalue = 5.23, $\alpha = 0.86$), and

‘Target-Driven Tension’ (eigenvalue = 3.45, α = 0.82), with all items loading above 0.6 on their respective factors. These constructs provided the analytical framework for the subsequent findings, which depict a health architecture where vertical donor programmes engender profound systemic fragmentation.

A dominant theme was the pervasive institutionalisation of parallel systems for monitoring and evaluation and human resource management (Chipanta et al., 2025). The vast majority of respondents (91.7%) confirmed the existence of dedicated data reporting tools for specific vertical programmes operating alongside the national Health Management Information System (HMIS) (Fombang & Wanzala, 2024). This operational duality was frequently described as creating a significant administrative burden, diverting clinical staff time towards fulfilling multiple, often duplicative, reporting mandates. Furthermore, this parallelism extends to human resources, with 84.3% of district-level managers reporting that a portion of their staff are directly funded by and report primarily to specific donor programmes. This arrangement was perceived to create internal inequities and complicate integrated service delivery, as these staff often operate with distinct supervisory lines and performance indicators (Mabika & Utete, 2024).

Closely linked is the issue of pronounced disparities in resource allocation, which respondents overwhelmingly attributed to vertical donor priorities (Kalinda et al., 2025). Cross-tabulation analysis revealed a strong association ($\chi^2 = 47.2$, $p < 0.001$) between facility type and the perceived reliability of commodity supply chains, with facilities hosting prominent vertical programmes reporting far greater consistency in obtaining essential commodities for those specific conditions (MULOONGO et al., 2025). In contrast, shortages for integrated primary care services, including for non-communicable diseases, were frequently cited as a chronic constraint. The allocation of logistical assets was also skewed, with 78.9% of respondents indicating that programme-dedicated vehicles were seldom available for integrated outreach or emergency referrals beyond their designated disease focus.

The survey also uncovered significant attitudinal barriers rooted in anxiety that integration would dilute focus and jeopardise the achievement of high-stakes, disease-specific targets (Wintrup, 2025). Regression analysis indicated that ‘Target-Driven Tension’ was the strongest predictor ($\beta = 0.52$, $p < 0.001$) of resistance to integrated service delivery models among programme managers (Matale et al., 2025). Respondents expressed concern that integrating, for instance, HIV screening into general outpatient departments could lead to missed indicators and subsequent reductions in funding, creating a perverse disincentive for the very integration that is rhetorically promoted (Reardon, 2025).

Furthermore, correlation analyses revealed a moderate but significant positive relationship ($r = 0.41$, $p < 0.01$) between the strength of ‘Resource Disparity’ perceptions and reported levels of workplace demoralisation among staff not affiliated with vertical programmes (Matapo & Mkandawire, 2025). This points to the human resource consequences of fragmentation, fostering a two-tiered workforce where morale and retention are challenged by inequitable access to training, incentives, and basic working tools (Mirisho et al., 2025). The strain on the health workforce is compounded by the expectation to navigate these parallel systems while addressing the complex, multi-morbid needs of patients, a task requiring a holistic approach often at odds with fragmented structures (Mumba & Siwila, 2025).

Finally, the data suggest that fragmentation impedes the adoption of innovative, cross-cutting solutions (Miyoba et al., 2025). Respondents noted that research and pilot interventions, even those with potential broad applicability, are often siloed within specific disease domains (Fombang & Wanzala, 2024). This systemic inertia stifles the innovation needed to build a more adaptive and self-reliant health system, leaving it vulnerable to catastrophic health expenditures (Müller et al., 2024) and ill-equipped to manage converging disease burdens (Mwale, 2025). These survey results collectively paint a detailed picture of a health system grappling with the intrinsic tensions between focused donor investment and the holistic imperatives of integrated care.

DISCUSSION

The discussion synthesises key findings on the persistent challenge of health system fragmentation in Zambia, particularly in the context of integrating vertical donor programmes (Chilukutu et al., 2025). Our survey data reveal that a significant majority of stakeholders perceive these programmes as operating in parallel to national structures, leading to duplicated reporting, competition for human resources, and inconsistent service delivery (MULOONGO et al., 2025). This aligns with broader critiques of vertical programming which, while often achieving targeted outcomes, can undermine the coherence and sustainability of the overall health system (Müller et al., 2024; Ravi et al., 2024). The Zambian context, with its multiplicity of actors and funding streams, exemplifies this tension, as noted in analyses of relational and operational fragmentation within the sector (Wintrup, 2025; Reardon, 2025).

Our analysis extends this understanding by elucidating the specific mechanisms through which fragmentation manifests (Chipanta et al., 2025). Participants highlighted that donor-driven timelines and indicators frequently divert mid-level managers from integrated primary healthcare duties, a finding that corroborates concerns about the distorting effects of externally prioritised agendas on local planning (Chipanta et al., 2025; Phiri et al., 2025). Furthermore, the reported lack of data harmonisation between vertical programmes and the district health information system supports the systematic review by MULOONGO et al. (2025), which identified weak health information systems as a critical barrier to evidence-based decision-making in low-resource settings.

Crucially, this study provides new evidence on the perceived consequences of this fragmentation (Fombang & Wanzala, 2024). Stakeholders consistently linked parallel systems to diminished staff morale, equity gaps in service access, and vulnerabilities in supply chain resilience (Mirisho et al., 2025). These insights resonate with literature on health system governance, which emphasises that fragmentation ultimately compromises the objectives of universal health coverage and health security (Fombang & Wanzala, 2024; Mabika & Utete, 2024). However, our findings also point to potential pathways for improvement. The strong stakeholder consensus on the need for strengthened government stewardship and aligned funding conditionality offers a clear directive for policy. This suggests that future efforts must move beyond technical integration to address the underlying political economy of donor relations, a point underscored in recent analyses of health financing in Zambia (Kalinda et al., 2025; Munshi et al., 2025).

While this study offers a detailed situational analysis from key informant perspectives, it acknowledges limitations, including its focus on stakeholder perceptions rather than quantitative system metrics (Kalinda et al., 2025). Future research should seek to measure the operational and health outcomes associated with different levels of programme integration (Mumba & Siwila, 2025). Nevertheless, the consistency of our findings with the broader literature on health systems strengthening confirms that reducing fragmentation is not merely an administrative concern but a fundamental prerequisite for a more effective, equitable, and resilient health system in Zambia.

CONCLUSION

This survey-based analysis substantiates the persistent and multifaceted challenge of health system fragmentation in Zambia, driven predominantly by the operational modalities of vertical donor programmes (Kalinda et al., 2025; Mumba & Siwila, 2025). The findings reveal a critical dissonance between policy commitments to integration and operational practice, manifesting in parallel planning, disjointed supply chains, and competing reporting requirements that strain public system capacity (Matale et al., 2025; Phiri et al., 2025). This undermines coherent service delivery and perpetuates inefficiencies the Zambian health sector cannot afford.

Zambia's experience is representative of a structural dilemma facing many low- and middle-income countries, where targeted donor investments can compromise holistic system resilience (Reardon, 2025; Wintrup, 2025). The pursuit of disease-specific targets often occurs at the expense of integrated care pathways essential for managing chronic conditions and comorbidities (Müller et al., 2024). Furthermore, fragmentation cripples strategic decision-making by weakening core system fundamentals; as MULOONGO et al. (2025) confirm, poor data infrastructure is a critical governance barrier, a finding echoed in our survey respondents' frustrations with duplicative donor data demands.

The implications necessitate urgent policy recalibration. A primary recommendation is reinvigorating harmonised funding through mechanisms like Sector-Wide Approaches, channelling resources via pooled arrangements aligned with the National Health Strategic Plan to mitigate distortions in human resources and procurement (Chipanta et al., 2025; Ngwisha et al., 2025). Concurrently, strengthening national health information systems by scaling integrated platforms like DHIS2 is non-negotiable, transforming them into unified tools for management beyond vertical programme reporting (Bhura et al., 2025; Ravi et al., 2024).

For Universal Health Coverage (UHC), the implications are direct: a fragmented system is inherently inequitable, creating gaps in coverage and financial protection (Sultana-Muchindu & Takainga, 2025). Achieving UHC requires a foundational shift towards people-centred, integrated models, deliberately knitting all system components into a coherent whole.

Future research must build on these findings, exploring political economy barriers to donor harmonisation and testing integrated service delivery models at district level. Studies should also quantify the transaction costs of fragmentation and assess the cost-effectiveness of integrated approaches (Munshi et al., 2025; Mwale, 2025). In conclusion, while technical arguments for integration are well-rehearsed, the political inertia sustaining fragmentation is formidable. A resilient health system capable of delivering UHC demands a courageous re-negotiation of the relationship

between the Zambian government and its development partners, placing the integrity of the national system above the objectives of individual programmes.

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