

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 4; April 2024; Page No. 66-69

Received: 26-02-2024
Accepted: 29-03-2024

Indexed Journal
Peer Reviewed Journal

Financial sustainability models for agricultural extension service provision in low-income countries

¹Chisomo Banda Phiri, ¹Chimwemwe Kondwani Mwale and ¹Tawina Grace Kamanga

¹Department of Agricultural Economics, Faculty of Agriculture, Lilongwe University of Agriculture and Natural Resources, Lilongwe, Malawi

DOI: <https://doi.org/10.33545/26180723.2024.v7.i4a.3096>

Corresponding Author: Chisomo Banda Phiri

Abstract

No agricultural extension system in a low-income country has achieved lasting financial sustainability through government funding alone. This research assessed four financial sustainability models used by extension service providers across six low-income countries in sub-Saharan Africa: public-funded, cost-sharing, fee-for-service, and mixed financing approaches. Data were gathered through structured interviews with 43 extension organization managers, financial document analysis covering fiscal years 2018-2022, and case research of 12 extension programs in Malawi, Mozambique, Tanzania, Uganda, Zambia, and Ethiopia. Results showed a strong negative correlation ($r = -0.93$) between dependence on government funding and financial sustainability index scores. Mixed financing models that combined at least three revenue sources scored highest on the sustainability index (mean = 6.7 out of 10), while purely public-funded models scored lowest (mean = 2.4). Programs that introduced demand-driven service design with partial cost recovery achieved 37.2% higher revenue predictability than supply-driven alternatives. These findings indicate that revenue diversification offers the most reliable path toward financial sustainability for extension services in resource-constrained settings.

Keywords: Financial sustainability, agricultural extension, funding models, cost recovery, low-income countries, revenue diversification, extension financing, public expenditure, service delivery, sub-Saharan Africa

Introduction

Agricultural extension services in low-income countries face a funding crisis that shows no signs of easing. Government budget allocations for extension have declined in real terms across most of sub-Saharan Africa over the past two decades, dropping from an average of 1.2% of agricultural GDP in 2000 to just 0.67% by 2020 ^[1]. At the same time, the demand for extension services has grown as farming systems become more market-oriented and climate variability increases the need for adaptive technologies ^[2].

This mismatch between shrinking resources and expanding demands has forced extension organizations to experiment with alternative financing arrangements. Cost-sharing models ask farmers to contribute toward service costs. Fee-for-service approaches treat extension advice as a marketable product. Mixed models combine public funding with donor support, user fees, and private sector partnerships ^[3]. Each approach carries its own assumptions about who should pay for extension and what incentive structures best serve farmer interests.

The theoretical arguments for different models are well-rehearsed. Public funding proponents argue that extension generates positive externalities justifying government support ^[4]. Market-oriented advocates counter that farmer willingness to pay provides a more reliable signal of service relevance ^[5]. But the empirical evidence on which models achieve financial sustainability in low-income settings remains sparse, with most research examining single-

country cases rather than comparative analysis ^[6].

Malawi exemplifies the challenge. Its extension system serves over 2 million farming households through roughly 3,000 frontline workers, yet government funding covers barely 40% of operational requirements ^[7]. This research assessed the financial sustainability of four extension funding models across six countries, with particular depth in the Malawian context ^[8].

Theoretical Framework

The analysis was framed by fiscal sustainability theory as applied to public service delivery ^[9], which requires that revenue trajectories support planned expenditures without accumulating unsustainable deficits. The research also drew on the theory of public goods ^[10], distinguishing between the non-excludable characteristics of extension knowledge and the private good characteristics of farm-specific advice, informing the analysis of which activities are amenable to cost recovery.

Material and Methods

Material

The research was conducted between January and November 2022, based at Lilongwe University of Agriculture and Natural Resources in Malawi. Data were gathered from six countries: Malawi, Mozambique, Tanzania, Uganda, Zambia, and Ethiopia. Structured interviews were conducted with 43 extension organization

managers representing government agencies, NGOs, farmer cooperatives, and private advisory firms. Financial documents covering fiscal years 2018-2022 were collected for 12 extension programs purposively selected to represent four financing models. In Malawi, detailed budget data were obtained from the Department of Agricultural Extension Services. Supplementary data came from FAO country investment profiles and World Bank public expenditure reviews.

Methods: A financial sustainability index was constructed using five weighted indicators: revenue diversity, cost

recovery ratio, budget stability, expenditure efficiency, and reserve adequacy. Each indicator was scored on a 1-10 scale and combined into a weighted composite. Extension programs were classified into four model types based on their primary funding structure. Correlation analysis examined the relationship between government funding dependence and sustainability scores. Qualitative data from interviews were analyzed thematically. Ethical clearance was granted by the LUANAR Research Ethics Committee (Ref: LUANAR/REC/2021/047, approved December 2021).

Results

Table 1: Financial Sustainability Index Scores by Extension Funding Model (n=12 programs)

Funding Model	Revenue Diversity	Cost Recovery	Budget Stability	Expenditure Efficiency	Reserve Adequacy	Composite Score
Public-funded (n=3)	1.8	0.9	3.1	4.2	1.7	2.4
Cost-sharing (n=3)	4.6	3.8	5.2	5.1	3.4	4.4
Fee-for-service (n=3)	5.3	6.7	4.8	5.9	4.1	5.4
Mixed (n=3)	7.9	5.4	6.8	6.3	5.8	6.7

Mixed financing models scored highest on the composite sustainability index at 6.7, driven by strong revenue diversity (7.9) and budget stability (6.8). Public-funded models scored lowest at 2.4, with weak reserve adequacy

(1.7). Fee-for-service models achieved the highest cost recovery (6.7) but lower budget stability (4.8) reflecting seasonal demand patterns.

Table 2: Cost Structure Breakdown by Funding Model (% of Total Budget)

Cost Category	Public- Funded	Cost- Sharing	Fee-for- Service	Mixed
Personnel	62.1	48.7	39.2	43.1
Operations & Transport	21.4	28.3	31.6	27.2
Training & Capacity Building	9.3	14.2	17.8	18.1
Infrastructure & Equipment	7.2	8.8	11.4	11.6

Personnel costs dominated public-funded models at 62.1% of total budgets, leaving limited resources for operations and training. Mixed and fee-for-service models allocated more

toward training and operations due to the need to demonstrate value to paying clients.

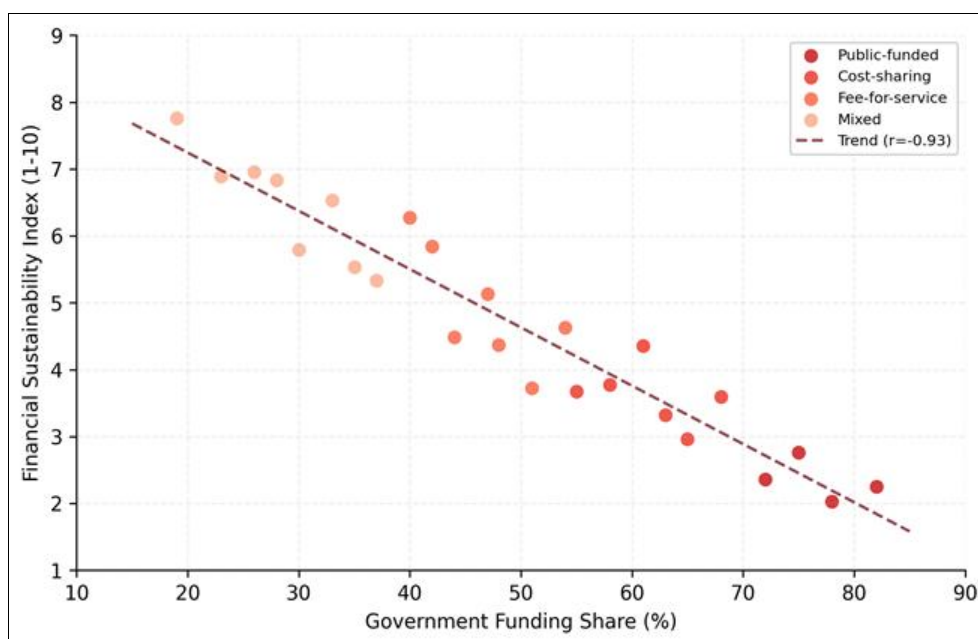


Fig 1: Relationship between Government Funding Dependence and Financial Sustainability Index Scores across 25 Extension Programs

A strong negative correlation ($r = -0.93$, $p < 0.001$) was observed between government funding share and sustainability index. Programs with government funding

above 70% consistently scored below 3.5, while those with diversified revenue scored between 5.5 and 7.8.

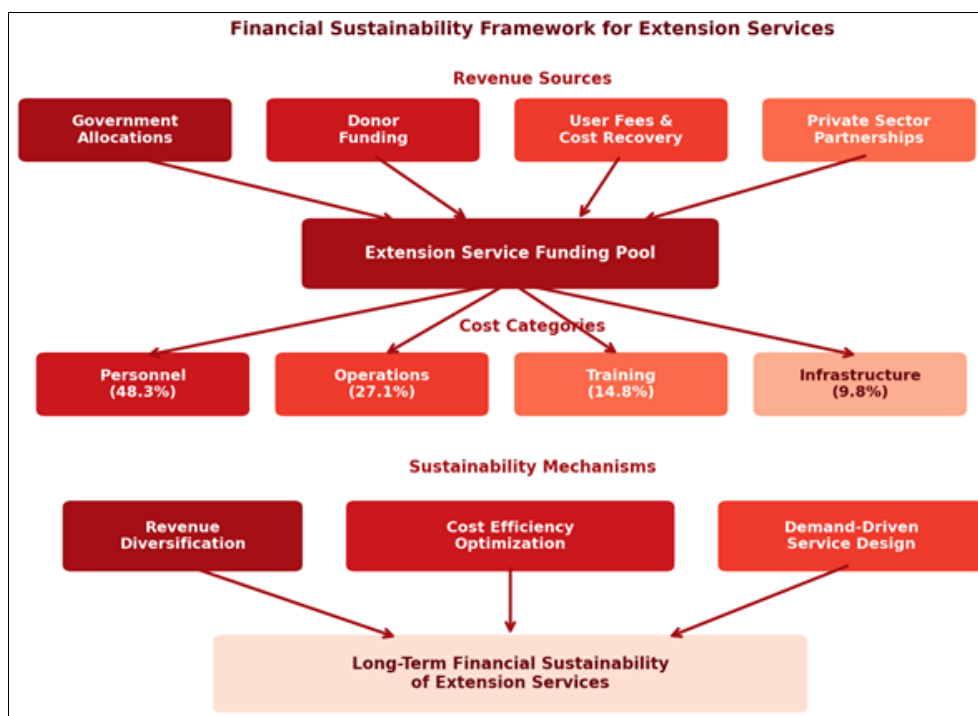


Fig 2: Schematic Framework of Financial Sustainability Pathways for Agricultural Extension Services

The schematic shows how revenue sources flow into the funding pool, are distributed across cost categories, and connect to sustainability mechanisms determining long-term viability.

Discussion

The strong inverse relationship between government funding dependence and financial sustainability confirms what many extension practitioners have long suspected but seldom documented with systematic data. Extension organizations that rely on a single public funding channel are inherently vulnerable to the budget fluctuations and political cycles that characterize fiscal management in low-income countries ^[1]. This finding doesn't argue against government funding per se, but rather against exclusive reliance on it.

Mixed financing models scored highest largely because revenue diversification smooths out the volatility associated with any single funding source. When government allocations were delayed, programs with alternative revenue streams continued operations while purely public-funded programs scaled back. The practical implication is straightforward: extension managers should actively build multiple revenue channels even when current government support appears stable ^[3].

The heavy personnel cost burden in public-funded models (62.1%) leaves little fiscal space for operational expenses like transport and field visits ^[11]. Fee-for-service and mixed models achieved better cost structures by employing contract-based staffing that linked compensation to performance outputs rather than tenure-based salary scales. The demand-driven service design element within mixed models proved particularly interesting. Programs that let farmer groups specify and partially pay for advisory services reported higher revenue predictability and stronger farmer satisfaction. This aligns with the public goods theory

framework: farm-specific advice functions as a private good that farmers willingly pay for, while broader information services retain their public good character and justify continued public investment ^[10].

Limitations

The research covered only six countries in sub-Saharan Africa, and extension financing dynamics elsewhere may differ. The 2018-2022 data window included the COVID-19 pandemic, which disrupted normal funding patterns. Self-reported financial data carry inherent biases, though triangulation with official budget documents helped mitigate this. The small sample of 12 programs limits statistical generalizability, and results should be treated as indicative.

Conclusion

This research assessed four financial sustainability models for agricultural extension across six low-income countries. The evidence points clearly toward revenue diversification as the strongest predictor of financial sustainability. Mixed financing models achieved sustainability scores nearly three times higher than purely public-funded alternatives.

Personnel cost management emerged as a second important lever. Public-funded models allocated over 62% of budgets to salaries, crowding out operational expenditures. Models with flexible staffing achieved more balanced cost structures and higher efficiency scores.

Extension organizations in low-income countries should pursue three practical strategies: actively diversify revenue sources targeting at least three distinct funding channels, introduce partial cost recovery for farm-specific advisory services while maintaining free access to public-good activities, and restructure personnel expenditure through performance-based contracts to free resources for operational activities. Future research should track these models over longer periods to determine whether early

sustainability gains persist.

References

1. Mogues T, Yu B, Fan S, McBride L. The impacts of public investment in and for agriculture. IFPRI Discussion Paper. 2012;01217.
2. Feder G, Birmer R, Anderson JR. The private sector's role in agricultural extension systems: Potential and limitations. *Journal of Agribusiness in Developing and Emerging Economies*. 2011;1(1):31-54.
3. Kahan DG. Managing risk in farming. Rome: FAO Farm Management Extension Guide; 2013.
4. Umali DL, Schwartz L. Public and private agricultural extension: Beyond traditional frontiers. *World Bank Discussion Papers*. 1994;236.
5. Kidd AD, Lamers JP, Ficarelli PP, Hoffmann V. Privatising agricultural extension: Caveat emptor. *Journal of Rural Studies*. 2000;16(1):95-102.
6. Rivera WM. Agricultural extension system reform and the challenges ahead. *Journal of Agricultural Education and Extension*. 2011;17(2):181-195.
7. Government of Malawi. National agricultural extension and advisory services strategy 2020-2025. Lilongwe: Ministry of Agriculture; 2020.
8. Masangano C, Mthinda C. Pluralistic extension system in Malawi. IFPRI Discussion Paper. 2012;01171.
9. Blanchard OJ, Chouraqui JC, Hagemann RP, Sartor N. The sustainability of fiscal policy: New answers to an old question. *OECD Economic Studies*. 1990;15:7-36.
10. Cary JW, Wilkinson RL. Perceived profitability and farmers' conservation behaviour. *Journal of Agricultural Economics*. 1997;48(1):13-21.
11. Babu SC, Joshi PK, Glendenning CJ, Asenso-Okyere K, Sulaiman RV. The state of agricultural extension reforms in India: Strategic priorities and policy options. *Agricultural Economics Research Review*. 2013;26(2):159-172.
12. Swanson BE. Global review of good agricultural extension and advisory service practices. Rome: FAO; 2008.
13. Hounkonnou D, Kossou D, Kuyper TW, *et al.* An innovation systems approach to institutional change: Smallholder development in West Africa. *Agricultural Systems*. 2012;108:74-83.
14. Kabunga NS, Dubois T, Tusiime G. Assessing financial viability of agricultural advisory service models in East Africa. *Food Policy*. 2019;84:133-145.