

Implementation Approaches, Community Engagement and Fund Utilization in AMPATH Diabetes Projects in Trans Nzoia County Kenya

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ABSTRACT: This study examined the relationship between implementation approaches and fund utilization in Academic Model Providing Access to Healthcare (AMPATH) supported diabetes projects in Trans Nzoia County, Kenya, and assessed the moderating role of community engagement. Agency theory and resource dependence theory guided an explanatory cross-sectional survey of personnel involved in project delivery. Structured questionnaires measured resource allocation, programme design and planning, monitoring systems, community engagement, and perceived fund utilization. The analysis combined descriptive statistics, reliability assessment, correlations, multiple regression, and hierarchical moderation analysis. The findings showed positive associations between the implementation dimensions and perceived fund utilization. Monitoring systems had the largest reported direct coefficient, while community engagement showed a positive interaction with the composite implementation measure. Respondents rated formal supervision and clear objectives more favourably than digital tracking, stakeholder involvement, and reporting irregularities. These patterns suggest that technical controls work more effectively when communities can provide information and obtain responses. The study recommends linking expenditure oversight to service delivery, strengthening inclusive feedback channels, and independently validating the statistical outputs before drawing definitive conclusions about effect magnitude.

KEYWORDS: implementation approaches, community engagement, fund utilization, diabetes projects, AMPATH, Kenya

1. INTRODUCTION

Diabetes care requires recurring expenditure on medicines, diagnostic supplies, clinical follow-up, and patient support. These continuing obligations make the quality of fund utilization central to service delivery. A programme can meet its expenditure targets while still purchasing inappropriate supplies, releasing resources late, or failing to reach patients. Fund utilization therefore concerns whether resources are deployed efficiently, transparently, and in ways that support the intended services. The distinction between expenditure and effective care follows established accounts of healthcare quality and system performance (Berwick et al., 2008; Donabedian, 1966; Kruk et al., 2018).

The diabetes burden in resource-constrained settings exposes weaknesses across financing and delivery arrangements. Research on sub-Saharan Africa describes barriers involving diagnosis, treatment access, and the organization of continuing care (Atun et al., 2017; Mbatia et al., 2010). Global prevalence estimates and historical trend analyses establish the broader importance of diabetes, while studies of insulin access illustrate the practical consequences of unreliable treatment systems (Beran et al., 2005; NCD Risk Factor Collaboration, 2016; Sun et al., 2022). The present investigation consequently examines a defined project setting and a specific perceived financial outcome.

AMPATH provides a relevant setting because its chronic disease services developed through partnerships connecting academic institutions, public facilities, and community activities. Research from western Kenya documents the evolution of diabetes care, the quality of care in rural clinics, and the use of revolving pharmacy funds to strengthen medicine availability (Pastakia et al., 2011; Pastakia et al., 2018; Tran et al., 2020). A medicine budget depends on procurement and stock management, while outreach expenditure depends on staffing and referral arrangements. Accordingly, the study examines resource allocation, programme design and planning, and monitoring systems as distinct dimensions of implementation.

Community engagement may influence the financial value obtained from these arrangements. Patients and community health workers can identify barriers that financial reports alone do not reveal, including inconvenient clinic schedules, missing commodities, and ineffective outreach. Participation can also help implementers understand which services communities regard

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as priorities. However, engagement varies in depth, authority, and inclusiveness. Research on community participation and coproduction distinguishes opportunities to attend activities from opportunities to shape decisions (Arnstein, 1969; Ostrom, 1996; Rifkin, 2014). This distinction motivates treating engagement as a possible moderator: its relevance may lie partly in changing how effectively technical implementation practices translate into useful expenditure.

Kenyan health financing research reinforces the importance of this connection. Direct facility funding has been examined as a response to reduced user fees, while facility committees provide a mechanism for local participation in management (Goodman et al., 2011; Opwora et al., 2010). Devolution research identifies administrative challenges affecting workforce and commodity management, and county-level budget execution research links financing processes with health system efficiency (Musiega et al., 2023; Tsofa et al., 2017). These findings indicate that formal allocations operate within institutional arrangements that determine when resources become usable. They also caution against attributing all implementation difficulties to the availability of donor money.

Donor funding introduces additional accountability relationships. Implementers answer to funders, public institutions, professional managers, and service users, whose priorities may differ. NGO research shows how reporting obligations and external funding can reshape organizational behaviour and the balance between accountability to donors and accountability to communities (Banks et al., 2015; Bano, 2008; Ebrahim, 2003; Edwards & Hulme, 1996). Transparent records are necessary, but records alone may not explain whether funded activities address local needs. The research problem therefore concerns the relationship between technical management and community-informed oversight within a donor-supported health programme.

Evidence on participation is encouraging but conditional. Reviews of social accountability identify the importance of responsive providers, clear responsibilities, credible information, and institutional support (Danhoundo et al., 2018; Lodenstein et al., 2017; Molyneux et al., 2012). Reviews of community engagement similarly distinguish improvements in empowerment and service processes from demonstrated health effects (Haldane et al., 2019; O'Mara-Eves et al., 2013; O'Mara-Eves et al., 2015). This literature provides plausible mechanisms through which engagement could strengthen fund utilization, yet much of it evaluates participation or service outcomes rather than the conditional relationship between project management and financial utilization. The study addresses that narrower gap without treating the wider literature as direct proof of its hypotheses.

The objective was to examine the associations of resource allocation, programme design and planning, and monitoring systems with fund utilization in AMPATH supported diabetes projects in Trans Nzoia County. A further objective was to assess whether community engagement moderated the relationship between an overall implementation measure and fund utilization. The contribution is a context-specific account of how operational management and participation may work together. Because the evidence derives from a cross-sectional questionnaire and contains inconsistent statistical summaries, the contribution concerns reported patterns and practical hypotheses requiring further verification, rather than established causal effects or audited estimates of financial efficiency.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Theoretical foundation

Agency theory explains problems that arise when principals delegate responsibilities to agents whose actions cannot be fully observed. Donors and governing institutions delegate programme delivery to managers, while managers depend on frontline personnel to execute activities. Information asymmetry creates a need for reporting, supervision, and credible controls. The central implication is that monitoring can reduce uncertainty about how resources are used (Eisenhardt, 1989; Jensen & Meckling, 1976). In this setting, community feedback may provide additional information about actual delivery. Nevertheless, community members are not simply substitute auditors, and the corporate origins of agency theory require adaptation to the multiple obligations of health projects.

Resource dependence theory complements this account by explaining how organizations respond to reliance on externally controlled resources. Health projects depend on financing, clinical expertise, commodities, institutional cooperation, and community acceptance. A review and meta-analysis of the theory show why external relationships matter for organizational choices and performance (Drees & Heugens, 2013; Hillman et al., 2009). Applied here, resource allocation reflects the capacity to organize available inputs, while engagement may improve access to local knowledge and cooperation. Dependence on donors can also encourage attention to externally defined requirements, potentially weakening responsiveness to service users when those requirements do not match local priorities.

Stakeholder theory adds a justification for considering groups affected by project decisions, including patients and community representatives (Donaldson & Preston, 1995). Accountability scholarship distinguishes obligations to explain decisions from arrangements that enable corrective action (Bovens, 2007; Brinkerhoff, 2004). NGO governance research further recognizes that

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different stakeholders possess unequal information and influence (Lewis, 2003; Wellens & Jegers, 2014). Together, these perspectives suggest that effective fund utilization depends on both administrative competence and relationships that permit priorities and implementation problems to be challenged. The theoretical expectation is complementary: resource management provides capacity, monitoring provides information, and engagement can make that information more relevant and actionable.

2.2 Resource allocation and fund utilization

Resource allocation concerns the distribution and timely availability of money, personnel, supplies, and other inputs needed to carry out planned activities. Its connection with utilization operates through practical sequencing. Screening requires trained staff and diagnostic supplies before outreach begins, while continuing treatment requires dependable procurement and financing. Health financing scholarship distinguishes the mobilization of resources from pooling and purchasing arrangements that determine their use (Kutzin, 2013; Lu et al., 2010; Ravishankar et al., 2009). Consequently, adequate funding can coexist with poor utilization when allocations are inaccessible, fragmented, or unrelated to service requirements.

Priority-setting research provides a more specific organizational explanation. Hospital-level studies examine how competing demands are evaluated, while Kenyan research demonstrates the influence of institutional processes and actor relationships on resource decisions (Barasa et al., 2015; Barasa et al., 2016). Allocation should therefore be assessed through the credibility of the budget and its relationship to identified needs. Timely release matters because delayed resources can interrupt implementation, force costly substitutions, or compress activities into a short reporting period. These mechanisms concern financial and operational alignment; they do not imply that spending more on every activity is desirable.

External financing can support health services while creating dependencies and coordination problems. Research on development assistance for health examines the distribution and evolution of international resource flows, and primary healthcare financing research examines how funding arrangements support broader service systems (Dieleman et al., 2016; Hanson et al., 2022). Public financial management scholarship similarly emphasizes the relationship between financial rules and service delivery requirements (Cashin et al., 2017; Ravishankar et al., 2024). For diabetes projects, the anticipated association is positive when resource allocation represents timely, need-responsive provision rather than the nominal size of a grant. The first null hypothesis is therefore stated as follows.

H01: Resource allocation has no statistically significant association with fund utilization in AMPATH supported diabetes projects in Trans Nzoia County, Kenya.

2.3 Programme design and planning and fund utilization

Programme design and planning translate objectives into activities, responsibilities, schedules, and resource requirements. A coherent plan links expenditure to intended outputs and clarifies what successful delivery would involve. Chronic care research emphasizes organized follow-up, prepared clinical teams, and support for patient self-management (Bodenheimer et al., 2002; Wagner et al., 2001). In diabetes programmes, these requirements make planning a continuing process because missed appointments, supply interruptions, and changing patient needs can alter the workload. Good planning should help expenditure support the sequence of care rather than isolated activities.

Implementation frameworks explain why a technically sound plan may still fail. The Consolidated Framework for Implementation Research identifies interacting features of interventions, settings, individuals, and implementation processes; its updated formulation strengthens attention to recipients and context (Damschroder et al., 2009; Damschroder et al., 2022). Normalization Process Theory examines the work required to embed practices, while research on service innovation identifies organizational conditions that influence adoption (Greenhalgh et al., 2004; May et al., 2009). These perspectives imply that planning should account for available capacity and the routines through which staff deliver care. Detailed documents have limited financial value when they assume resources or cooperation that are unavailable.

Guidance on complex interventions also supports explicit programme logic and adaptation. The original and updated Medical Research Council frameworks emphasize development, evaluation, context, and the interaction between interventions and systems (Craig et al., 2008; Skivington et al., 2021). Process evaluation examines implementation, mechanisms, and contextual influences, while adaptation frameworks support documenting changes rather than treating every modification as failure (Moore et al., 2015; Wiltsey Stirman et al., 2019). Effective planning may therefore improve utilization by anticipating dependencies and allowing justified adjustments. However, plans that exclude frontline and community knowledge can direct spending toward activities that satisfy administrative requirements but attract limited uptake.

H02: Programme design and planning have no statistically significant association with fund utilization in AMPATH supported diabetes projects in Trans Nzoia County, Kenya.

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2.4 Monitoring systems and fund utilization

Monitoring systems generate information about whether activities and expenditures follow agreed expectations. They include supervision, financial checks, reporting, feedback, and digital tracking. Their financial relevance depends on the capacity to identify discrepancies early and support corrective action. Implementation research differentiates implementation outcomes from service and clinical outcomes, thereby discouraging the use of one indicator as a substitute for every aspect of success (Peters et al., 2013; Proctor et al., 2011). A financial monitoring system should similarly distinguish whether funds were spent, whether services were delivered, and whether those services were useful.

Evidence from accountability interventions shows that oversight can influence behaviour but that its effectiveness depends on design. Community monitoring in Uganda and external auditing in Indonesia provide experimental evidence concerning different accountability mechanisms (Björkman & Svensson, 2009; Olken, 2007). Their results cannot be transferred mechanically to AMPATH projects, because the sectors, institutions, and interventions differ. Nevertheless, they support the proposition that credible information and an expectation of response can change implementation behaviour. NGO research adds that communication technology can support transparency, while accountability processes must preserve organizational learning rather than merely expand reporting burdens (Ebrahim, 2003; Vaccaro & Madsen, 2009).

The implementation literature identifies structured strategies for introducing practices and assessing whether they reach intended users (Glasgow et al., 1999; Glasgow et al., 2019; Powell et al., 2015). Monitoring can help managers use these strategies selectively by identifying which problems reflect weak delivery and which reflect inappropriate programme assumptions. Research on implementation quality and sustainability further shows why supervision should continue beyond initial adoption (Durlak & DuPre, 2008; Moore et al., 2017; Wiltsey Stirman et al., 2012). For fund utilization, the expected positive relationship reflects the potential of monitoring to reduce avoidable expenditure and guide remedial action.

H03: Monitoring systems have no statistically significant association with fund utilization in AMPATH supported diabetes projects in Trans Nzoia County, Kenya.

2.5 Community engagement as a moderator

Community engagement involves opportunities for local people to contribute to decisions, provide feedback, participate in oversight, and obtain responses. Its measurement must consider influence as well as attendance. Early work on participation emphasizes processes and the distribution of decision-making power, while community-based participatory research examines relationships through which knowledge and authority are shared (Israel et al., 1998; Rifkin et al., 1988; Wallerstein & Duran, 2006; Wallerstein & Duran, 2010). In a financial management setting, this suggests that engagement can help test whether expenditure priorities reflect patient needs and whether reported activities occurred as intended.

Social accountability research offers the mechanism most relevant to moderation. Community scorecards and facility committees can connect service experience with management decisions, but their performance depends on institutional responsiveness and support (Gullo et al., 2016; Gullo et al., 2017; McCoy et al., 2012). Kenyan community dialogue research and Ghanaian scorecard research illustrate practical arrangements for exchanging information between providers and communities (Blake et al., 2016; Kaseje et al., 2010). Engagement may therefore strengthen implementation by improving the information available for allocation, revealing planning weaknesses, and prompting follow-up on monitoring findings. These are possible explanatory pathways; the survey did not separately identify or estimate each pathway.

Participation can also fail to change outcomes. Experimental evidence from participatory education programmes and broader development reviews caution that collective action may be limited by knowledge, incentives, and unequal authority (Banerjee et al., 2010; Mansuri & Rao, 2004). Reviews of citizen engagement and transparency initiatives likewise show that information disclosure does not guarantee accountability (Fox, 2015; Gaventa & Barrett, 2010; Joshi, 2013). For health programmes, a feedback mechanism may record concerns without empowering staff to resolve them. A positive moderation hypothesis thus assumes that engagement includes usable information and management response, rather than community attendance alone.

Health systems research shows substantial variation in how participation is conceptualized and evaluated (Cleary et al., 2013; George et al., 2015). Trust can influence whether people disclose problems, and the design of health knowledge systems can privilege some voices over others (Abimbola, 2016; Gilson, 2003). These considerations make inclusion relevant to financial management. If representatives primarily reflect influential groups, an apparently participatory process may direct spending away from less visible patients. The expected strengthening effect is consequently conditional on meaningful and sufficiently inclusive engagement. The final null hypothesis tests the overall implementation relationship rather than separate interactions for every implementation dimension.

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H04: Community engagement has no statistically significant moderating effect on the relationship between implementation approaches and fund utilization in AMPATH supported diabetes projects in Trans Nzoia County, Kenya.

3. RESEARCH METHODOLOGY

3.1 Design population and sampling

The study used an explanatory cross-sectional quantitative design to examine associations among measured constructs. The study setting comprised AMPATH supported diabetes projects in Trans Nzoia County. The population frame contained 405 personnel grouped as nurses, clinical officers, laboratory officers, community health workers, and project officers. These categories provide the basis for the operational sampling account, rather than the broader stakeholder descriptions elsewhere in the thesis. The primary observational unit was an individual respondent reporting on project practices.

The sample target was 201 respondents, calculated using a finite-population formula with a precision parameter of .05. Equation 1 gives the calculation. Proportionate allocation assigned respondents to the professional strata, followed by the reported random selection within strata. Table 2 presents the population, target sample, and achieved responses (Cameron & Miller, 2015).

$$n = \frac{N}{1 + Ne^2} = \frac{405}{1 + 405(.05)^2} = 201.24 \quad (1)$$

The main methods and results identify 201 questionnaires and 192 returns, corresponding to a calculated response rate of 95.5% (Groves & Peytcheva, 2008).

3.2 Measurement and instrument quality

Data were collected using a structured questionnaire with five response categories, ranging from strongly disagree to strongly agree. Resource allocation, programme design and planning, monitoring systems, community engagement, and fund utilization were assessed through multiple statements. Table 1 summarizes their conceptual content. Fund utilization was measured through perceptions of efficiency, transparency, accountability, and wastage control.

Table 1: Measurement of study variables

Construct	Role	Operational content
Resource allocation	Predictor	Budget adequacy, timely releases, resources, efficiency
Programme design and planning	Predictor	Objectives, schedules, participation, budget alignment
Monitoring systems	Predictor	Supervision, audits, feedback, digital tracking
Community engagement	Moderator	Meetings, community feedback, oversight, reporting concerns
Perceived fund utilization	Outcome	Efficiency, transparency, accountability, wastage control

Source: Researcher (2026)

The questionnaire underwent the reported supervisory review and a pilot involving 21 respondents in Uasin Gishu County. These procedures can improve wording and content coverage but do not themselves establish construct validity. Scale-development guidance distinguishes item generation, assessment of dimensionality, and evaluation of measurement properties (Boateng et al., 2018).

The measurement documentation contains unresolved differences. The article reports six items for allocation and planning, seven for monitoring, six for engagement, and eight for utilization; the appendix supplies different coefficients and a different monitoring item count (Podsakoff et al., 2003; Podsakoff et al., 2012).

3.3 Analytical models and interpretation

Descriptive statistics summarized the responses, and Pearson correlations examined bivariate associations. Multiple regression related fund utilization to the three implementation dimensions, as represented by Equation 2. A hierarchical model then examined an overall implementation measure, engagement, and their product term in Equation 3. The latter is a separate composite model; its reported explanatory power is not directly comparable to that of the disaggregated model.

$$UF_i = \beta_0 + \beta_1 RA_i + \beta_2 PDP_i + \beta_3 MS_i + \varepsilon_i \quad (2)$$

$$UF_i = \gamma_0 + \gamma_1 IA_i + \gamma_2 CE_i + \gamma_3 (IA_i \times CE_i) + \varepsilon_i \quad (3)$$

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In the equations, UF denotes perceived fund utilization, RA resource allocation, PDP programme design and planning, MS monitoring systems, IA the overall implementation measure, and CE community engagement. The error term represents unexplained respondent-level variation. Moderation concerns whether the conditional slope of IA changes with CE, as shown in Equation 4, rather than whether engagement merely correlates with the outcome (Baron & Kenny, 1986; McClelland & Judd, 1993).

$$\frac{\partial E(UF_i | IA_i, CE_i)}{\partial IA_i} = \gamma_1 + \gamma_3 CE_i \quad (4)$$

The analysis used SPSS and a .05 significance threshold.

4. DATA ANALYSIS AND PRESENTATION

4.1 Respondent profile and descriptive findings

The 192 respondents comprised 58 nurses, 39 clinical officers, 27 laboratory personnel, 44 community health workers, and 24 project officers. Their representation broadly followed the population strata, although the study provides no weighting adjustment or comparison of respondents with nonrespondents. There were 102 men and 90 women. The largest age category was 30–39 years, and the largest experience category was 5–10 years.

Table 2: Population target sample and achieved responses by professional category

Category	Population	Target n	Responses n
Nurses	123	61	58
Clinical officers	82	41	39
Laboratory personnel	58	29	27
Community health workers	91	45	44
Project officers	51	25	24
Total	405	201	192

Source: Researcher (2026)

Descriptive statistics suggest generally favourable but uneven assessments of implementation. Adequate budgeting had a mean of 3.84, compared with 3.70 for efficiency in resource use. Clear project objectives averaged 3.89, while stakeholder involvement averaged 3.58. This pattern indicates that formal planning was perceived more favourably than participation in planning. It is consistent with the possibility that projects possess clear administrative objectives while needing stronger mechanisms for bringing service experience into resource decisions.

The contrast appeared in monitoring. Regular supervision visits averaged 3.91, whereas digital tracking averaged 3.44 with a standard deviation of 1.01. Information systems require reliable data and usable workflows, and implementation frameworks emphasize fit with local capacity (Damschroder et al., 2022; May et al., 2009). A proportionate response would examine how current monitoring information is collected and used before selecting additional technology. Digital expenditure should be justified by the decisions it improves.

For fund utilization, accountability mechanisms averaged 3.76, while minimal wastage averaged 3.62. Community meeting participation averaged 3.80, compared with 3.55 for reporting irregularities. Together, these results suggest that respondents perceived formal forums more favourably than mechanisms for escalating concerns. The differences should not be interpreted as proof of financial misconduct. They indicate perceptions about the strength of practices, not verified irregularities or measured losses. Research on participation supports distinguishing visible opportunities to engage from the ability to influence decisions and secure responses (Arnstein, 1969; Cleary et al., 2013).

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Table 3: Reported scale reliability and selected descriptive indicators

Construct	<i>k</i>	α	Selected indicator	<i>M</i>	<i>SD</i>
Resource allocation	6	.82	Efficiency in resource use	3.70	0.90
Programme planning	6	.84	Stakeholder involvement	3.58	0.95
Monitoring systems	7	.86	Digital tracking	3.44	1.01
Community engagement	6	.81	Reporting irregularities	3.55	1.00
Fund utilization	8	.88	Minimal resource wastage	3.62	0.93

Source: Researcher (2026)

4.2 Reliability diagnostics and correlations

The findings report alpha coefficients of .82 for allocation, .84 for planning, .86 for monitoring, .81 for engagement, and .88 for utilization. These values suggest acceptable internal consistency within the reported scales. Their interpretation remains limited by conflicting appendix coefficients and unresolved item counts. This matters because reliability attaches to particular responses and item sets, rather than to a construct in the abstract. Verification should therefore connect the final questionnaire, variable coding, and output before the coefficients are treated as definitive (Boateng et al., 2018; Dunn et al., 2014).

The reported diagnostic values require careful interpretation. Variance inflation factors ranged from 1.89 to 2.34, while tolerance values ranged from .43 to .53. These figures do not indicate extreme collinearity in the reported direct model, although fixed thresholds should not replace examination of the model and available information (O'Brien, 2007). Reported skewness and kurtosis describe the distributions of measured variables; they do not establish normality of regression errors.

Table 4: Reported distribution and collinearity diagnostics

Variable	Skewness	Kurtosis	Tolerance	<i>VIF</i>
Resource allocation	-.42	.31	.47	2.11
Programme planning	-.38	.28	.53	1.89
Monitoring systems	-.51	.44	.43	2.34
Community engagement	-.29	.27	—	—
Fund utilization	-.36	.19	—	—

Source: Researcher (2026)

The thesis describes a residual plot as supporting constant error variance, but the underlying observations and fitted residuals are unavailable for independent examination. In such circumstances, diagnostic claims should remain attributed to the reported analysis. Heteroskedasticity-consistent inference and appropriate treatment of clustering would provide useful checks in a reanalysis (Cameron & Miller, 2015; White, 1980). Neither concern is resolved by a high response rate or by satisfactory internal consistency.

The correlation matrix in Table 5 shows positive associations between fund utilization and resource allocation, $r = .671$; planning, $r = .624$; monitoring, $r = .731$; and engagement, $r = .603$. All were reported as significant at $p < .05$. These findings suggest that favourable assessments of project management and participation tended to accompany favourable assessments of utilization. They cannot establish direction of influence, and common measurement may contribute to the associations (Podsakoff et al., 2003; Podsakoff et al., 2012).

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Table 5: Pearson correlations among study constructs

Variable	1	2	3	4	5
1 Resource allocation	—				
2 Programme planning	.642**	—			
3 Monitoring systems	.593**	.614**	—		
4 Community engagement	.521**	.548**	.582**	—	
5 Fund utilization	.671**	.624**	.731**	.603**	—

Note. N = 192. ** $p < .05$

Source: Researcher (2026)

4.3 Direct effects and reporting consistency

The direct regression table reports positive coefficients for allocation, .390; planning, .340; and monitoring, .550, with each displayed as statistically significant. The source labels these coefficients as beta, although the inclusion of a constant and standard errors makes their precise standardization unclear. Table 6 consequently identifies them as reported coefficients. A value of .390 cannot be interpreted as a 39% improvement in fund utilization. Standardized coefficients express change in standard deviation units, while unstandardized coefficients express change in the outcome scale for a predictor-unit change.

Table 6: Reported coefficients for the disaggregated implementation model

Predictor	Coefficient ^a	SE	<i>t</i>	<i>p</i>	VIF
Constant	1.080	0.290	3.720	< .05	—
Resource allocation	0.390	0.070	5.570	< .05	2.110
Programme planning	0.340	0.080	4.250	< .05	1.890
Monitoring systems	0.550	0.060	7.420	< .05	2.340

Note. ^a The source labels the column β , but standardization is unresolved. Reported fit: $R = .830$, $R^2 = .689$, adjusted $R^2 = .664$, standard error of estimate = .394, and $F(3, 188) = 44.820$, $p < .05$. Fit statistics and some coefficient ratios are internally inconsistent. Values are retained as reported; no confidence intervals or corrected estimates have been invented.

Source: Researcher (2026)

The model summary reports $R^2 = .689$ and adjusted $R^2 = .664$, but the adjustment is inconsistent with the stated sample and three predictors. The ANOVA table reports $F(3, 188) = 44.820$ alongside sums of squares and mean squares that imply a different F statistic.

Monitoring has the largest coefficient in the reported table, but even its coefficient, standard error, and t statistic are not mutually consistent. The reported rejection of the direct null hypotheses is therefore preserved as a source finding and interpreted provisionally. The study provides evidence of a consistently positive reported pattern, but the available documentation cannot establish a verified magnitude or valid uncertainty interval. Statistical reporting guidance supports this restraint because significance depends on the underlying model and analysis, not solely on a displayed threshold (von Elm et al., 2007; Wasserstein & Lazar, 2016).

4.4 Moderation findings

The hierarchical summary reports R^2 values of .468, .575, and .642 for the implementation-only, implementation-plus-engagement, and interaction models, respectively. The reported increment following the interaction is .067. The associated coefficient table gives $B = .216$, $SE = .069$, $\beta = .194$, $t = 3.130$, and $p = .002$ for the product term. Table 7 presents these values with the relevant qualification. The positive sign is consistent with a stronger implementation slope at higher engagement scores, conditional on the coding and model specification.

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Table 7: Reported coefficients for the composite implementation moderation model

Term	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
Constant	0.984	0.227	—	4.335	< .05
Implementation approaches	0.512	0.063	.524	8.127	< .05
Community engagement	0.398	0.071	.361	5.606	< .05
Implementation × engagement	0.216	0.069	.194	3.130	< .05

Note. Reported sequential R^2 values are .468, .575, and .642; interaction $\Delta R^2 = .067$.

Source: Researcher (2026).

4.5 Discussion

The findings are consistent with the proposition that useful financing depends on the timing and organization of resources. Kenyan budget execution research identifies practical obstacles involving credibility, disbursement, procurement, and autonomy (Musiega et al., 2023). The pattern also aligns with work on health priority setting and the distribution of authority (Barasa et al., 2015; Barasa et al., 2016).

The planning findings connect financial management with the organization of continuing care. Kenyan studies document diabetes prevalence and the financial burdens borne by patients (Mohamed et al., 2018; Oyando et al., 2020). These burdens make patient-sensitive scheduling and outreach relevant to expenditure priorities. The BIGPIC pilot and subsequent randomized group-visit research demonstrate the importance of examining integrated clinical and economic approaches in western Kenya (Pastakia et al., 2017; Vedanthan et al., 2021). Their outcomes differ from perceived project fund utilization, so they provide contextual support for the mechanism rather than validation of this study's regression coefficients.

Monitoring can support learning when information leads to changes in delivery. Implementation research recommends distinguishing reach, adoption, fidelity, and maintenance rather than relying on one aggregate performance judgement (Glasgow et al., 1999; Glasgow et al., 2019; Proctor et al., 2011). Sustainability research similarly links the continuation of activities to the organizational arrangements supporting them (Moore et al., 2017; Wiltsey Stirman et al., 2012). The descriptive weakness in digital tracking suggests an information-management issue for investigation.

The engagement pattern is compatible with accountability operating through trusted relationships and management response. Reviews of African social accountability and provider responsiveness stress these conditions (Danhouno et al., 2018; Lodenstein et al., 2017). Reviews of community engagement document varied outcomes and emphasize the difficulty of attributing effects to participation within complex interventions (Haldane et al., 2019; Milton et al., 2012; O'Mara-Eves et al., 2013; O'Mara-Eves et al., 2015). The present evidence supports treating engagement as an organizational process whose possible financial contribution needs explicit mechanisms.

AMPATH-related research also makes engagement operationally plausible. The Harambee feasibility study examines integrated community care through microfinance groups, while partnership research describes a population health approach in western Kenya (Kafu et al., 2022; Mercer et al., 2018). Research on cardiovascular risk factors provides additional context for integrated chronic disease services (Bloomfield et al., 2013). These studies show why project implementation may depend on arrangements extending beyond clinic walls. They do not establish that all community structures are inclusive or that engagement automatically improves accountability. Programme managers should assess whose experience reaches formal decision-making and whose experience remains absent.

4.6 Limitations

The cross-sectional design measures implementation, engagement, and utilization at the same time. It cannot establish temporal ordering or eliminate reverse causation. Methodological research on cross-sectional models illustrates the difficulty of identifying processes that unfold over time from one measurement occasion (Maxwell & Cole, 2007). Future work should combine repeated assessments with independently documented expenditure and service indicators. Such a design would permit examination of whether changes in implementation precede changes in utilization and whether participation contributes information that is acted upon.

Measurement limitations also affect the interpretation. Several questionnaire statements incorporate assertions about the expected benefits of practices, potentially encouraging agreement rather than measuring observed behaviour. Financial and operational concepts overlap within the scales, and the final item sets are not securely documented. Future instruments should

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ask about specific practices within a defined period, such as the time taken to resolve feedback or the consistency of medicine availability. Scale development and common method research support separating conceptual domains and using more than one evidence source (Boateng et al., 2018; Podsakoff et al., 2012).

The facility setting creates potential dependence between observations. Personnel working together may report common supervisors, budgets, and information systems. Treating their responses as independent can exaggerate precision when within-facility correlations exist (Cameron & Miller, 2015). The recruitment account and statistical tables also require reconciliation before replication. Future reporting should retain a clear participant flow, identify exclusions, document composite construction, and provide complete coefficient and model summaries. These requirements follow the general logic of transparent observational reporting and would materially improve the credibility of subsequent hypothesis tests (von Elm et al., 2007).

Finally, perceived financial effectiveness must be distinguished from equitable access and clinical benefit. Health equity research emphasizes that resources should respond to social disadvantage, while community health worker research examines the support needed for effective delivery (Hodgins et al., 2021; Jeet et al., 2017; Marmot et al., 2008; Whitehead, 1991). A broader evaluation should therefore connect financial records to service continuity, patient costs, and distributional outcomes. These additions would assess whether better utilization produces value for patients rather than simply a stronger administrative record.

5. CONCLUSION AND RECOMMENDATIONS

The reported evidence associates resource allocation, programme design and planning, and monitoring systems with favourable perceptions of fund utilization in AMPATH supported diabetes projects. It also reports a positive interaction between overall implementation approaches and community engagement. Monitoring has the largest direct coefficient, but statistical inconsistencies prevent a definitive ranking or effect-size claim. The defensible conclusion is that technical management and community-informed processes appear complementary in the reported perceptions. Establishing the magnitude, independence, and practical financial consequences of those relationships requires verified data and consistent analytical outputs.

Project managers should connect budgets to the operational requirements of continuing diabetes care. Allocation decisions should identify essential supplies, staffing requirements, and the timing of activities, then review whether funds reach those uses when needed. Planning should include frontline personnel and patient representatives early enough to influence priorities. Guidance on complex interventions and implementation processes supports using contextual knowledge to refine activities rather than assuming that a fixed plan will fit every setting (Damschroder et al., 2022; Moore et al., 2015; Skivington et al., 2021). The emphasis should be on documented decisions and dependable delivery.

Monitoring should combine financial checks with service indicators. A review of expenditure should ask whether planned consultations, medicine provision, and follow-up occurred, and whether emerging problems prompted a response. Any investment in digital tracking should begin with clear information needs and a realistic account of staff workload. Community health worker financing research further supports recognizing the costs of supervision, training, and continuing programme support (Masis et al., 2021).

Community feedback should be accessible, inclusive, and linked to named responsibilities for follow-up. Meeting attendance is insufficient evidence of influence. Managers should communicate what was raised, what action was taken, and which matters require escalation. Community scorecard and facility committee research supports the value of structured dialogue while cautioning that authority and institutional response determine effectiveness (Gullo et al., 2016; McCoy et al., 2012; Molyneux et al., 2012). Representation should also consider patients who face transport, time, literacy, or other participation barriers. This approach makes engagement relevant to expenditure decisions and helps identify service priorities that administrative reports may overlook.

Before publication or policy use, the original analysis should be reproduced to reconcile the response denominator, item counts, reliability coefficients, correlation matrices, and regression summaries. A verified analysis should identify whether coefficients are standardized, document composite construction, and evaluate the interaction using consistent model-change and coefficient statistics. Subsequent studies should use longitudinal or appropriately designed comparative approaches, with implementation and outcome measurement selected for the question being tested (Bennett et al., 2020; Curran et al., 2012; Durlak & DuPre, 2008; Yuan et al., 2021). The resulting evidence would support more specific conclusions about which practices improve financial utilization, for whom, and under what conditions.

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