



The Effect of Financial Management Practices on Project Performance: Evidence from the Rwanda Agri-Biotechnology Program (RABP-CMP)

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Abstract: This study examined the effect of financial management practices on project performance using the Rwanda Agri-Biotechnology Program for Cassava, Maize, and Potato (RABP-CMP) in Musanze District, Rwanda. Specifically, the study assessed the influence of budgeting practices, financial reporting, internal control systems, and resource allocation on program performance. Guided by the Resource-Based View, Agency Theory, and Stewardship Theory, the study adopted descriptive and explanatory research designs and applied a census approach involving 151 project stakeholders, of whom 149 completed structured questionnaires. Data were analyzed using descriptive statistics, Pearson correlation, and multiple linear regression. The findings revealed significant positive relationships between budgeting practices ($r = .641, p < .01$), financial reporting ($r = .689, p < .01$), internal controls ($r = .721, p < .01$), resource allocation ($r = .632, p < .01$), and project performance. Regression results showed that budgeting ($\beta = .241, p = .002$), financial reporting ($\beta = .214, p = .009$), internal controls ($\beta = .298, p < .001$), and resource allocation ($\beta = .187, p = .018$) significantly predicted performance. The model explained 46.1% of the variance in program performance ($R^2 = .461$). Internal controls emerged as the strongest predictor. The study recommends strengthening participatory budgeting, enhancing financial reporting quality, reinforcing internal control systems, and improving strategic resource allocation in donor-funded agricultural programs.

Keywords: Financial management, budgeting, internal controls, financial reporting, resource allocation, project performance.

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1. Introduction

Agricultural development programs in Sub-Saharan Africa play a central role in improving food security, raising smallholder productivity, and strengthening rural livelihoods. However, the extent to which such programs achieve their intended outcomes depends heavily on the strength of the financial management systems that underpin them (International Federation of Accountants [IFAC], 2018). Where budgeting is weak, financial reporting is delayed, internal controls are deficient, or resources are poorly allocated, development programs risk resource misallocation, reduced donor confidence, and diminished impact (World Bank, 2020).

In Rwanda, agricultural biotechnology programs such as the Rwanda Agri-Biotechnology Program for Cassava, Maize, and Potato (RABP-CMP) operate through multi-institutional funding and accountability arrangements. RABP-CMP is implemented by the Rwanda Agriculture and Animal Resources Development Board through a subgrant from the African Agricultural Technology Foundation, with funding from the Gates Foundation. Previous Rwandan studies have examined budgeting, financial reporting, and internal controls in nongovernmental organizations, public institutions, and financial institutions (Dusabimana & Kiptanui, 2026; Mukandoli & Rusibana, 2022; Ndabananiye et al., 2023). However, limited evidence evaluates these practices together with resource allocation in a donor-funded

agricultural biotechnology program. This study addresses that gap by estimating the individual and combined associations of the four practices with RABP-CMP performance.

This study contributes to financial management and project performance literature in three ways. First, it provides empirical evidence from a donor-funded agricultural biotechnology program, a context that remains underrepresented in Rwanda and Sub-Saharan Africa. Second, it examines budgeting practices, financial reporting, internal controls, and resource allocation simultaneously within a single analytical framework. Third, it demonstrates the relative importance of individual financial management practices, showing that internal controls exert the strongest influence on project performance within the RABP-CMP program.

2. Literature Review

2.1 Theoretical Review

The study was anchored on three complementary theories. The Resource-Based View (Barney, 1991, 2014) holds that an organization's sustained performance depends on how effectively it deploys valuable, rare, and difficult-to-imitate internal resources, including its financial management capabilities. Agency Theory (Jensen & Meckling, 1976; Eisenhardt, 1989) explains the relationship between donors (principals) and program managers (agents), where financial reporting and internal controls reduce information asymmetry and align agents' actions with principals' interests. Stewardship Theory (Davis et al., 1997) complements this view by proposing that, given appropriate financial systems and trust, program managers act as responsible stewards of entrusted resources rather than purely self-interested agents.

2.2 Empirical Review

Rwandan evidence generally associates sound financial management with stronger organizational and project performance. Studies of budgetary control, internal controls, internal audit, and month-end closing practices report improvements in financial sustainability, accountability, reporting quality, and operational performance (Dusabimana & Kiptanui, 2026; Mukandoli & Rusibana, 2022; Mukanza & Kengere, 2024; Ndabananiye et al., 2023; Nishimwe & Kengere, 2023). However, much of this evidence comes from NGOs, public institutions, and financial institutions, where operational cycles and funding arrangements differ from those of agricultural biotechnology programs. The studies also tend to examine one practice at a time or treat financial management as a composite construct, making it difficult to determine the independent contribution of budgeting, financial reporting, internal controls, and resource allocation. The present study responds to these limitations by testing all four practices within one model and by locating the analysis in a donor-funded agricultural biotechnology program whose field activities are technically interdependent and time-sensitive.

Based on the theoretical and empirical review, the study tested four null hypotheses: H_{01} , budgeting practices have no statistically significant effect on RABP-CMP performance; H_{02} , financial reporting has no statistically significant effect on RABP-CMP performance; H_{03} , internal control systems have no statistically significant effect on RABP-CMP performance; and H_{04} , resource allocation has no statistically significant effect on RABP-CMP performance.

2.3 Conceptual Framework

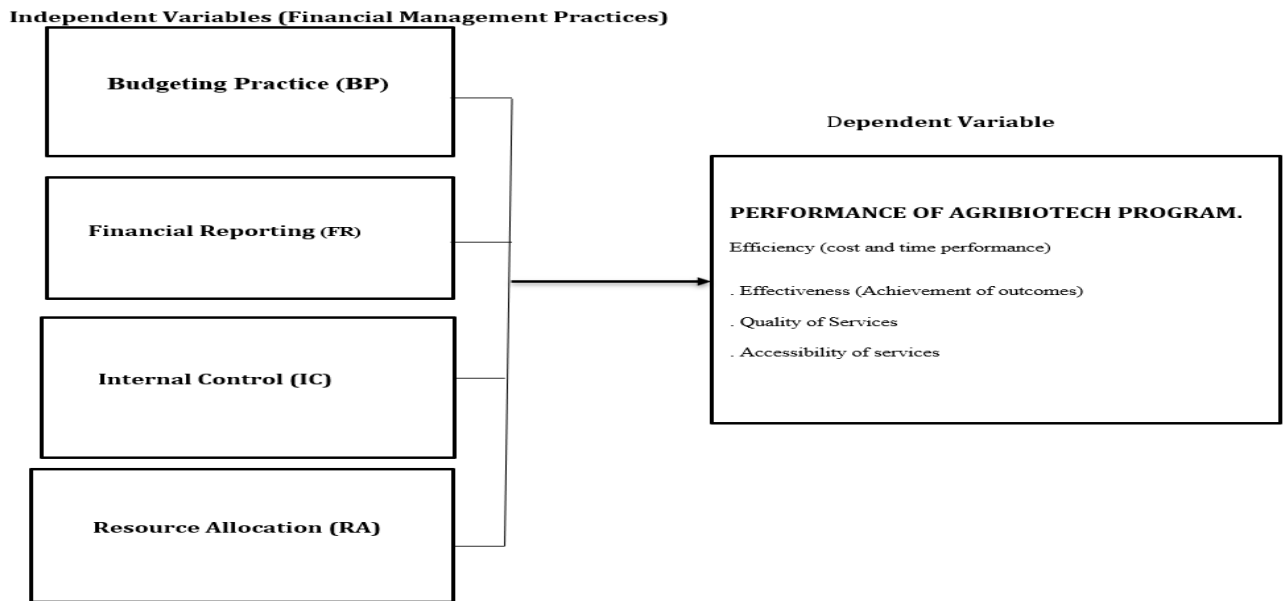


Figure 1: Conceptual Framework of the Study

3. Methodology

The study adopted descriptive and explanatory research designs (Saunders et al., 2019; Kothari, 2004). The descriptive component established the prevailing financial management practices and level of RABP-CMP performance, while the explanatory component examined relationships among budgeting practices, financial reporting, internal control systems, resource allocation, and program performance. The target population comprised 151 individuals involved in program implementation, financial management, supervision, monitoring, and support. Because the population was manageable, all 151 individuals were invited to participate through a census approach. A total of 149 complete questionnaires were returned and

analyzed, representing a response rate of 98.7%. Primary data were collected using a structured questionnaire. Reliability was confirmed by Cronbach's alpha coefficients above 0.70 for all constructs (Nunnally & Bernstein, 1994), while content validity was assessed through expert review. Data were analyzed in SPSS Version 27 using descriptive statistics, Pearson correlation, and multiple linear regression, and hypotheses were tested at the 5% significance level.

4. Results and Discussion

4.1 Correlation Analysis

Table 1 presents the Pearson correlation matrix examining the relationships between the four financial management practices and the performance of RABP-CMP, based on responses from 149 valid participants.

Table 1: Pearson Correlation Matrix of Financial Management Practices and Program Performance

Variable		X1	X2	X3	X4	Y
Budgeting (X1)	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	149				
Financial Reporting (X2)	Pearson Correlation	.612	1			
	Sig. (2-tailed)	.000				
	N	149	149			
Internal Controls (X3)	Pearson Correlation	.584	.653	1		
	Sig. (2-tailed)	.000	.000			
	N	149	149	149		
Resource Allocation (X4)	Pearson Correlation	.539	.571	.598	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	149	149	149	149	
performance (Y)	Pearson Correlation	.641	.689	.721	.632	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	149	149	149	149	149

** Correlation is significant at the 0.01 level (2-tailed). Source: Field data, 2026.

As shown in Table 1, all four financial management practices were positively and statistically significantly correlated with program performance ($p < .01$). Internal controls had the strongest correlation with performance ($r = .721$), followed by financial reporting ($r = .689$), budgeting practices ($r = .641$), and resource allocation ($r = .632$). The independent variables were also positively intercorrelated, with the strongest correlation occurring between internal controls and financial reporting ($r =$

.653). This degree of intercorrelation warrants formal assessment of multicollinearity before the regression coefficients are interpreted.

4.2 Regression Analysis

Regression model summary.

Table 2: Regression Model Summary and ANOVA Results

Model	R	R ²	Adj. R ²	Std. Error	F	Sig.
Regression Model	0.679	0.461	0.447	0.350	30.790	<0.001

Source: Field data, 2026

The regression model revealed a strong positive relationship between financial management practices and program performance ($R = 0.679$). The model explained 46.1% of the variance in performance ($R^2 = 0.461$; Adjusted $R^2 = 0.447$), indicating that budgeting practices, financial reporting, internal controls, and resource allocation collectively contribute to program performance.

The ANOVA results showed that the regression model was statistically significant, $F(4, 144) = 30.79$, $p < .001$. Thus, the four predictors jointly accounted for a statistically significant proportion of the variance in RABP-CMP performance.

Table 3: Regression Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta (β)	T	Sig.
Constant	11.25	0.214		52.57	0.000
Budgeting	0.241	0.076	0.241	3.162	0.002
Financial reporting	0.214	0.081	0.214	2.642	0.009
Internal control	0.298	0.079	0.298	3.772	0.000
Resource allocation	0.187	0.078	0.187	2.397	0.018

Source: Field data, 2026.

The regression coefficients in Table 3 indicate that all four financial management practices are positive and statistically significant predictors of program performance. Internal controls emerged as the strongest predictor ($\beta = .298$, $p < .001$), followed by budgeting practices ($\beta = .241$, $p = .002$), financial reporting ($\beta = .214$, $p = .009$), and resource allocation ($\beta = .187$, $p = .018$). The resulting regression equation is:

Performance = 11.25 + .241(Budgeting) + .214(Financial Reporting) + .298(Internal Controls) + .187(Resource Allocation) + ϵ .

4.3 Discussion

Budgeting Practices and Project Performance

The findings are consistent with Silas and Gathiru (2026) and Nyirarukundo and Kabanda (2026), who reported that effective budgeting enhances planning, expenditure control, and successful project implementation. Effective budgeting provides a framework for setting priorities, allocating resources efficiently, and monitoring financial performance against planned activities. It also helps management identify potential financial gaps and take corrective actions in a timely manner. Consequently, projects are more likely to utilize resources efficiently, complete activities within budget, achieve intended objectives, and improve overall project performance.

Financial Reporting and Project Performance

The study found that financial reporting has a positive and significant effect on the performance of RABP-CMP. This implies that timely, accurate, and reliable financial reports contribute to improved project outcomes by enhancing accountability and supporting effective decision-making. Financial reporting enables management and stakeholders to monitor project activities, assess financial performance, and ensure that resources are utilized in accordance with approved plans and objectives. These findings are consistent with previous studies that identified financial reporting as a key factor in promoting transparency, financial control, and organizational effectiveness. Therefore, strengthening financial reporting practices can improve operational efficiency, stakeholder confidence, and the overall performance of development projects.

Internal Controls and Project Performance

The findings support previous studies that found strong internal control systems improve accountability, operational efficiency, and the protection of organizational resources. Effective internal controls establish clear procedures for authorization, segregation of duties, record keeping, and monitoring of financial transactions, thereby reducing the risk of fraud, errors, and mismanagement. They also enhance compliance with organizational policies, donor requirements, and regulatory standards, which contributes to greater transparency and stakeholder confidence. Furthermore, robust control mechanisms enable management to identify and address operational weaknesses in a timely manner, leading to improved decision-making and resource utilization. Consequently, organizations with strong internal control systems are better positioned to achieve project objectives, enhance service delivery, and improve overall project performance. By promoting financial discipline and accountability, effective internal controls contribute significantly to the sustainability and success of development programs.

Resource Allocation and Project Performance

The findings are consistent with previous studies indicating that allocating resources according to project priorities improves efficiency and enhances the achievement of project objectives. Effective resource allocation ensures that financial, human, and material resources are directed toward activities that generate the greatest value and contribute most significantly to project outcomes. It enables project managers to balance competing demands, optimize resource utilization, and avoid unnecessary expenditure or underutilization of available resources. Furthermore, appropriate resource allocation facilitates the timely implementation of project activities, reduces operational bottlenecks, and improves overall productivity. When resources are distributed based on strategic priorities and actual program needs, organizations are better able to achieve their intended goals and maximize the impact of development interventions. Consequently, effective resource allocation enhances project performance by improving efficiency, effectiveness, and the sustainable use of organizational resources.

4.4 Study Contribution

From a theoretical perspective, the findings support the Resource-Based View by demonstrating that financial management capabilities constitute valuable organizational resources that enhance project performance. The findings also support Agency Theory and Stewardship Theory by highlighting the importance of accountability, transparency, and responsible stewardship of donor resources. Practically, the study provides evidence for project managers and development partners on the importance of strengthening internal controls, budgeting systems, financial reporting, and resource allocation practices within donor-funded programs.

4.5 Limitations

This study faced several limitations, including logistical challenges in accessing some respondents, variations in the availability and consistency of secondary project records, and the possibility of respondent bias in questionnaires and interviews. Additionally, because the research focused only on the Rwanda Agri-Biotechnology Program (RABP-CMP) in Musanze District, the findings may not be fully generalizable to other RAB projects or stations. Despite these limitations, appropriate measures were taken to ensure the collection of reliable data, and the study provides valuable evidence on the relationship between financial management practices and project performance within the program.

5. Conclusion and Recommendations

5.1 Conclusion

This study examined the relationship between financial management practices and the performance of the Rwanda Agri-Biotechnology Program (RABP-CMP) in Musanze District. The findings revealed that budgeting practices, financial reporting, internal controls, and resource allocation positively and significantly influence program performance, jointly explaining 46.1% of the variation in performance. This indicates that effective financial management plays an important role in enhancing organizational efficiency, accountability, and the achievement of program objectives. The results further demonstrate that organizations with strong financial management systems are better positioned to utilize resources effectively and deliver expected outcomes.

Among the variables examined, internal controls emerged as the strongest predictor of program performance. This highlights the importance of robust control mechanisms such as authorization procedures, segregation of duties, regular monitoring, and safeguarding of assets. Effective internal controls help reduce financial risks, prevent misuse of resources, and promote transparency and accountability. The findings

therefore suggest that strengthening internal control systems should remain a priority for RABP-CMP and similar development programs seeking to improve operational performance and stakeholder confidence.

The study also established that budgeting practices, financial reporting, and resource allocation make significant contributions to program success. Proper budgeting supports planning and efficient use of resources, while timely and accurate financial reporting enhances informed decision-making and accountability. Similarly, strategic resource allocation ensures that available funds are directed toward priority activities that generate the greatest impact. These findings are consistent with Agency Theory and the Resource-Based View, which emphasize the value of control mechanisms and organizational capabilities in achieving improved performance.

Based on these findings, RABP-CMP should strengthen participatory budgeting processes, improve the quality and timeliness of financial reporting, reinforce internal controls through continuous monitoring and compliance reviews, and ensure strategic allocation of resources to priority activities. Management should also invest in capacity building and financial management systems to enhance operational effectiveness. Since 53.9% of the variation in program performance is explained by factors outside the scope of this study, future research should investigate additional determinants such as leadership, organizational culture, technology adoption, and stakeholder engagement to provide a more comprehensive understanding of program performance.

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