



Effect of Project Planning Practices on Performance of Projects: A Case of Rwanda Dairy Development Project in Ruhango District, Rwanda

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Abstract: This study examined the effect of project planning practices on the performance of the Rwanda Dairy Development Project in Ruhango District, Rwanda. The specific objectives were to assess the effect of resources planning, operational planning, and monitoring and evaluation planning on project performance. The study was guided by Resource-Based View Theory, Systems Theory, and the Logical Framework Approach. A descriptive and correlational research design was adopted using quantitative and qualitative approaches and primary and secondary data. The target population comprised 365 individuals directly involved in the planning and implementation of the Rwanda Dairy Development Project, from whom a sample of 191 respondents was selected using Slovin's formula. Stratified random sampling and simple random sampling were applied to select participants. Primary data were collected using structured questionnaires, while secondary data were obtained through documentation review. Data were analysed using SPSS version 27 through descriptive statistics, bivariate correlation, and multiple linear regression. The regression findings showed that resources planning was the strongest predictor of project performance ($B = 0.521$, $t = 10.633$, $p = 0.000$), followed by operational planning ($B = 0.223$, $t = 4.956$, $p = 0.000$) and monitoring and evaluation planning ($B = 0.196$, $t = 3.769$, $p = 0.000$). The study concluded that structured planning across resources, operations, and monitoring and evaluation significantly enhances project performance. It recommends establishing a centralized digital resource registry to improve material inventory and vehicle allocation.

Keywords: Project Planning Practices, Resources Planning, Operational Planning, Monitoring and Evaluation Planning, Project Performance, Rwanda Dairy Development Project

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1. Introduction

Project planning can be described as the structured arrangement of tasks, responsibilities, timelines, and coordination processes that guide a project from initial conception to completion. It establishes clarity of purpose and provides a framework for organizing resources, communication, and supervision. Project

planning supports a shared understanding among stakeholders and creates reference points that help maintain direction when unexpected conditions arise during implementation (IdeaScale, 2024). The practice appears in community development programs, water and infrastructure works, education sector investments, and health system strengthening efforts. This shared function across fields allows examination of project planning experiences in several regions of the world to understand how planning principles are shaped through cultural,

administrative, and institutional environments (Neely et al., 2021).

Project planning in Latin American region illustrates attention to preparatory steps that shape coordination and delivery. In Brazil, development and infrastructure projects often begin with detailed clarification of project scope, communication routes across participating organizations, and early establishment of monitoring paths. Research in Brazilian project management notes that planning receives extended emphasis because clarity at this stage influences coordination during execution (Mourougane, 2023). In construction and development, project planners focus on identifying key performance conditions, sequencing activities with logical order, and establishing communication links among workers, contractors, and supervisory units. This structured preparation supports steady progress during implementation because actors share an established interpretation of how work should proceed and how roles relate to one another (Pereira et al., 2022).

In European region, project planning practices in Germany show a structured connection between planning documents and regulatory frameworks within public administration. German infrastructure projects usually start with formal documentation that outlines responsibilities, resource allocation decisions, scheduling arrangements, and consultation requirements (Mouton & Ferreira, 2024). Planning is linked with institutional accountability, meaning project deliverables and procedural expectations are documented in forms that can be monitored. Studies note that German project planning highlights early discussion with government agencies, private contractors, and affected community groups, which reduces misinterpretation during implementation. Planning documents become active guidance tools rather than only preparatory files (Henneberg & Naqvi, 2022).

Project planning in Asian region reflects varied administrative scales and community engagement traditions. In India, research on rural water and agricultural development initiatives shows that planning processes frequently integrate local committees and residents into decision spaces. Meetings at the planning stage allow participants to voice local priorities and provide knowledge about the environment in which the project operated. This approach strengthens continuity because local actors understand project objectives and can coordinate support during implementation. Indian planning practices emphasize the value of shared understanding between project agencies and community groups from the start of the process (Sharma & Singh, 2023).

Planning practices in Africa show varied expressions shaped through national governance systems and project environments. Planning arrangements in Egyptian construction and public works projects are shaped

through coordination efforts across government institutions and contractors. Studies on planning approaches in Egypt explain that planning documents which clearly outline time schedules, budgeting decisions, and scope conditions are essential for maintaining project continuity. The planning phase helps balance technical requirements with administrative guidance when responsibilities are dispersed across multiple organizations. In this context, strong planning contributes to implementation stability in environments that experience administrative change (Said & Rayes, 2022).

Planning practices in Kenya highlight the importance of consistent communication and shared interpretation of objectives. Water supply and community development project studies in Kenya show that planning meetings, resource allocation arrangements, and early establishment of budgeting clarity contribute to stronger performance outcomes. Planning in this context supports stable coordination between funding agencies, technical implementers, and local beneficiaries. When communication channels are structured at the planning stage, the implementation phase proceeds with reduced conflict and clearer tracking of responsibilities (Musau & Wambua, 2023).

Project planning in Rwanda aligns with national priorities that emphasize accountability, transparency, and structured implementation pathways. Within community development programs, planning helps link project goals with the expectations and capacities of local residents. Research on community development projects in Rwanda explains that detailed planning frameworks allow stakeholders to coordinate actions and maintain consistent engagement across phases of work. Planning supports smooth transitions from initiation to implementation because stakeholders already share an established understanding of tasks and outcomes (Ndayambaje, 2022).

Water supply development projects in Rwanda display the importance of resource allocation clarity and structured task sequencing during planning. Studies examining water system expansion initiatives highlight that planning decisions concerning resource distribution, technical steps, and support roles influence the coherence of implementation. When planning activities specify responsibilities and scheduling, implementation progresses without extended delay and resource conflicts. Planning quality therefore has a direct connection with continuity of water supply project execution (Mukeshimana, 2023).

Public investment projects achieve high performance through effective planning practices that ensure timely completion, cost efficiency, and adherence to quality standards. Projects are expected to deliver outputs as scheduled, minimize idle resources, and maintain strong coordination between stakeholders. Proper planning of

scope, schedule, resources, and risk enables smooth implementation and prevents performance losses such as delays, cost overruns, and quality failures.

Rwanda reflects persistent poor project performance evidenced by significant delays, idle investments, and quality shortcomings. The Office of the Auditor General (2024) reported 17 delayed contracts worth Frw 130.77 billion, with some projects reaching up to 98.7% of planned time while achieving only 22% to 57% physical progress, indicating severe inefficiency. The same report identified 23 stalled projects valued at Frw 19.02 billion and 491 idle assets worth Frw 7.90 billion across 45 institutions, demonstrating underutilization of public resources. Empirical findings further show that 52.4% of respondents strongly agreed that ineffective monitoring tools affect implementation, while 64.2% highlighted weaknesses in budgeting and feedback systems (Mupende, 2023). In the dairy sector, over 60% of milk is still sold through informal channels, reflecting inefficiencies in planning market systems, while laboratory tests revealed antibiotic residues in 6% of milk samples, indicating persistent quality control failures (Habiyaremye et al., 2023; Iraguha et al., 2024). These statistics collectively confirm widespread poor performance across projects.

The gap therefore lies in the inadequate empirical examination of how specific project planning practices contribute to this poor performance. While existing studies document delays, stalled projects, and quality failures, they do not explicitly analyze how planning elements such as scope definition, scheduling, resource allocation, and feedback mechanisms influence these outcomes. In particular, there is no study that has assessed how these planning practices affect the performance of the Rwanda Dairy Development Project in Ruhango District. This study therefore addressed this gap by providing empirical evidence on how project planning practices can improve performance and reduce inefficiencies in agricultural development projects.

1.1 General Objective

The general objective of this study is to assess the effect of project planning practices on the performance of Rwanda Dairy Development Project in Ruhango District, Rwanda.

1.2 Specific Objectives

- i. To examine the effect of resources planning on performance of Rwanda Dairy Development Project in Ruhango District.
- ii. To evaluate the effect of operational planning on performance of Rwanda Dairy Development Project in Ruhango District.
- iii. To assess the effect of monitoring and evaluation planning on performance of

Rwanda Dairy Development Project in
Ruhango District.

2. Literature Review

The literature review presents the theoretical foundations and empirical evidence related to project planning practices and performance of the Project.

2.1 Theoretical Review

The theoretical review provides the foundation that guides understanding of planning and performance within project environments. It identifies structured ideas that explain how resources are used, how coordination occurs, and how objectives are arranged. The theories selected are Resource-Based View Theory, Systems Theory, and the Logical Framework Approach.

2.1.1 Resource-Based View Theory

Resource-Based View Theory was introduced in 1991 in the United States through strategic management scholarship to explain that project performance depends on the possession and strategic deployment of resources that are valuable, rare, difficult to imitate, and not easily substituted, thereby enabling sustained competitive advantage (Kozlenkova et al., 2022). It addresses what resources exist, who holds authority over them, when deployment occurs, where allocation is applied, and whom the resource configuration is intended to support during operations. The theory positions-controlled resource use as a foundation for stability during implementation, especially under limited conditions (Pereira et al., 2022).

The theory emphasizes the structured identification and scheduling of financial inputs, personnel, equipment, and materials, clarifying when resources are used and who manages them. By preventing interruptions, reducing excess expenditure, and maintaining continuity, effective resource planning strengthens performance through consistent alignment between task execution and resource availability across all phases of implementation (Lee & Chen, 2023).

The study used Resource-Based View Theory to explain how resource planning contributes to performance through structured identification and allocation of financial, human, and material inputs. The theory guided analysis of how control, timing, and coordination of resources support continuity and quality in Rwanda Dairy Development Project in Ruhango District.

2.1.2 Systems Theory

Systems Theory was presented in 1968 in Austria through scientific work that examined connected processes, explaining that a project functions as a set of

interlinked components where each part influences others, and clarifying what elements constitute the system, who coordinates interactions, when alignment is needed, where linkages occur, and whom each function supports (Sesti, 2023). The theory identifies coordination as essential to maintaining functional movement between activities, emphasizing that structured interaction among interdependent components enables process alignment, reduces operational friction, and supports continuity across project phases, thereby reinforcing the systemic integrity and responsiveness of the implementation structure (Martins & Silva, 2022).

Systems Theory supports structured communication channels and clear task sequencing, ensuring that planning maintains coordination between actors and functions throughout execution. As new conditions emerge, adjustments and feedback mechanisms sustain progress, and when planning aligns system elements, it reduces conflicts and delays while preserving implementation continuity across project phases (Ansah et al., 2022).

The study used Systems Theory to explain operational planning through linked activities, communication channels, and task sequencing. The theory clarified how coordination across units and functions supports timely progress, reduces delays, and maintains alignment in Rwanda Dairy Development Project in Ruhango District during project implementation process stages.

2.1.3 Logical Framework Approach

The Logical Framework Approach, developed in 1969 in the United States for development programming, structures project design into inputs, activities, outputs, outcomes, and long-term impacts, clarifying objectives, responsibilities, timelines, implementation sites, and target beneficiaries to ensure coherent planning, accountability, and measurable progress across all stages (Lee, 2025). The approach clarifies expected change before implementation begins by defining intended outcomes, measurable indicators, and critical assumptions that shape the logic of intervention, enabling planners to anticipate progress, align stakeholder roles, and evaluate feasibility before committing resources or initiating activities (Kumar & Rao, 2024).

The Logical Framework Approach strengthens planning by defining performance indicators and verification methods in advance, enabling structured monitoring and evaluation that aligns assessment with intended outcomes. Through a shared project matrix, it clarifies stakeholder responsibilities and expectations, supports consistent tracking of results, and facilitates timely adjustments as activities progress across implementation phases (Olwenyi et al., 2025).

The study used the Logical Framework Approach to explain monitoring and evaluation planning through the arrangement of inputs, activities, outputs, and outcomes. The theory guided examination of performance indicators, evidence requirements, and result tracking in Rwanda Dairy Development Project in Ruhango District during assessment stages for effectiveness.

2.2 Empirical Review

The empirical review examines previous studies on resources planning, operational planning, and monitoring and evaluation planning in relation to project performance.

2.2.1 Effect of Resources Planning on Project Performance

Ariana et al. (2025) examined planning and organizing within project-based firms in Pakistan using PLS-SEM across 217 respondents. The model reported satisfactory reliability and validity, then estimated structural paths showing planning intensity and organizing practices as significant drivers of project performance. Reported standardized coefficients indicated meaningful effects of planning activities on delivery outcomes, while model fit indices and bootstrap confidence intervals supported those links. The study's tables present positive path coefficients from planning constructs to performance, confirming that structured resource estimation, allocation routines, and scheduling clarity raise delivery timeliness and quality scores. The analysis also documented internal consistency for latent variables and acceptable average variance extracted, aligning with current SEM reporting conventions. The evidence positions resource planning as a performance lever where clearer allocation rules and upfront capacity checks translate into higher cost control, better schedule adherence, and improved stakeholder ratings within project environments.

Mpanju (2024) examined resource planning practices in government funded construction projects within Arusha, Dar es Salaam, Dodoma, Morogoro, and Pwani regions in Tanzania. A total of 105 respondents were sampled, including project owners, site managers, consultants, and contractors registered under the National Construction Council. The study applied descriptive statistics, Pearson correlation, ANOVA, and multiple regression to measure the connection between resource planning and project performance. Resource planning was assessed through allocation procedures, scheduling routines, budgeting clarity, and availability of required inputs. The findings indicated that resource scheduling and allocation processes had a statistically significant influence on performance, particularly in terms of completion timelines and adherence to cost expectations. Projects that practiced systematic distribution of materials and equipment recorded fewer interruptions during implementation. The study recommended the adoption

of structured project management plans supported with clear communication channels to strengthen alignment between resource availability and work progression across public construction activities in the selected Tanzanian regions.

Kimamuka (2024) assessed the Hinga Weze agricultural project with a census of 62 staff, applying correlation and multiple regression to test resource planning effects. Mean scores indicated strong presence of core practices: resource scheduling 4.46, allocation 4.46, identification 4.33, skills assessment 4.39, and budgeting 4.40 on a five-point scale. The association between resource planning and performance registered $R = .863$, with approximately 74.4 percent of performance variance explained according to R^2 stated in the abstract. Performance dimensions also scored highly, including completion within time at 4.516 and quality at 4.429. The study connects those routines to improved outcome attainment and recommends strengthened risk identification and diversified funding to maintain gains. Evidence therefore positions structured resource planning as a central determinant of delivery success within a large agricultural initiative operating across Rwanda.

2.2.2 Effect of Operational Planning on Project Performance

Miladi and Ammari (2024) evaluated strategic and operational planning within Iraqi manufacturing firms, using a quantitative design with regression models. Reported model statistics include $R^2 = 0.617$, adjusted $R^2 = 0.610$, $F = 102.6$, and $p < 0.001$, indicating strong explanatory power for planning variables over performance. Sub-dimension tests showed significant coefficients for strategy implementation routines and operational alignment mechanisms, translating to improved financial and nonfinancial outcomes. The paper details sample characteristics, instrument reliability exceeding common thresholds, and diagnostic checks that support inference. Results show that formalized operational plans linked to measurable targets, resource calendars, and review cycles correlate with efficiency gains and quality improvements across plants. These findings align with contemporary views that precise work sequencing, production scheduling, and control charts elevate delivery predictability and reduce rework within manufacturing projects.

Okoye et al. (2025) assessed the effect of operational planning practices within construction projects in Nigeria. The research targeted 73 respondents drawn from project coordination and technical supervision functions and applied one sample t tests and Pearson correlation analysis. Operational planning was evaluated through sequencing of activities, scheduling techniques, and the application of planning tools within site management routines. The study recorded a statistically significant t value of 20.712 with $p = .000$ when testing

the relationship between scheduling practices and project performance. Correlation analysis indicated strong positive relationships between the application of bar charts and performance with $r = .987$ and $p = .029$, and between the critical path method and performance with $r = .877$ and $p = .033$. These findings identified structured planning of work steps and activity timelines as a factor supporting consistency in output delivery. The study recommended increased training in scheduling tools to improve planning capacity within construction projects in Nigeria.

Habiyaremye (2023) analysed planning practices within the “Construction of Adam Business Centre” project in Kigali using mixed methods and SPSS outputs. The quantitative model recorded an adjusted R^2 of 0.386 for the planning construct with $B = 0.340$ and $p = 0.000$ against project performance, indicating meaningful explanatory reach for operational plans. Additional models linked other management factors, though planning remained a key predictor. Documented practices included work-breakdown structures, procurement calendars, and resource-loaded schedules connected to milestones. The thesis emphasised that tighter plan quality raised timeliness and cost adherence, while weaker plans correlated with slippage on finish dates. The numeric evidence shows operational planning acting through scope clarity and sequencing to stabilize delivery performance within a complex commercial build in Kigali.

2.2.3 Effect of Monitoring and Evaluation Planning on Project Performance

Olwenyi et al. (2025) studied Global Partnership for Education projects in Uganda, focusing on M&E planning and project performance within an applied management journal format. The paper details an empirical test of M&E planning dimensions against delivery outcomes, concluding that planned frameworks and indicator matrices significantly improve goal attainment. Reported sections describe instrument validation and regression testing, with statistically significant parameters for planning quality over time and cost results. The article’s narrative connects logical frameworks, baseline design, and indicator specificity to higher completion rates and fewer cost variances across education projects. The study offers concrete parameter estimates within the PDF version and positions M&E planning as a structured route to stronger performance within large education portfolios operating in East Africa.

Karuga et al. (2024) presented a companion analysis on financial resource scheduling in Nairobi that includes earned value metrics and schedule indices for ongoing projects. While centred on resource scheduling, the article’s methodology integrates monitoring checkpoints and variance tracking as part of the operational-control plan. The paper documents adoption of cost performance index and schedule performance index to assess results,

and reports significant scheduling-performance effects with $R^2 = 0.312$ and $F = 66.442$. Those same monitoring structures function as a planning product for M&E, since index tracking depends on predefined baselines and periodic measurement windows. The analysis therefore illustrates how upfront M&E planning with explicit tracking rules enhances evidence on progress and supports corrective action that stabilizes time and cost outcomes on road projects.

Habarurema and Akims (2024) assessed construction projects in Gasabo District with a focus on M&E planning, staff skills management, and ICT management. The article reports significant effects for M&E planning on project performance using regression analysis, as indicated in the journal landing page and the full text hosted on ResearchGate. The study sampled 263 respondents, applied a descriptive design, and tested hypotheses using inferential statistics, confirming positive coefficients for M&E planning. Complementary Rwanda evidence comes from a Tubura Project paper that reported $\beta = 0.382$ with $t = 8.061$ and $p = 0.000$ for project monitoring and evaluation over success scores in Nyanza District. These numerics show that planned indicators, baseline design, and periodic measurement raise delivery performance across local construction and agricultural portfolios.

3. Methodology

The methodology presents the research design, study population, sampling procedures, data collection methods, validity and reliability, data analysis, and ethical considerations.

3.1 Research Design

The study adopted descriptive and correlational research designs. The descriptive design was used to examine the existing conditions of the Rwanda Dairy Development Project in Ruhango District, while the correlational design was used to establish the strength and direction of relationships between project planning practices and project performance.

3.2 Study Population

For this study on project planning practices and performance of Rwanda Dairy Development Project in Ruhango District, the research population would total 365 individuals. The population included four categories: 10 project managers and coordinators, 83 project staff and team members, 198 beneficiaries' representatives, and 74 local leaders. Each category aligned with direct engagement in planning practices within the dairy project, enabling comprehensive assessment of effects on project performance.

3.3 Sampling Design

Slovin's formula was used to compute the sample size because it provides a clear and direct method for determining the number of respondents required. The researcher applied the formula below to determine how many persons to include in the study.

When applied to the study population, the computation would yield a sample size of 191.

3.4 Data Collection Instrument

This study used primary and secondary data, and each data type had specific instruments for collection.

A questionnaire refers to a structured instrument with clearly worded items and fixed response formats, designed to ensure reliable measurement, valid comparisons, and efficient coverage of a defined respondent group (Martins & Silva, 2022).

According to Martins and Silva (2022), documentation is the methodical examination of official records, plans, and reports that store structured traces of activities and outcomes, enabling verification of timelines, targets, and resource use through consistent extraction templates that preserve source integrity and support comparison across report editions.

For the Rwanda Dairy Development Project, annual reports and efficiency reports supported contextualization of planning practices and performance trends.

3.5 Pilot Study, Validity and Reliability

A pretest covering ten percent of the sample size was conducted with project managers and staff to appraise questionnaire fitness. Expert review complemented the pretest to strengthen content validity across the three planning domains and the performance construct. The Content Validity Index was computed by dividing the number of relevant items (n) with the total number of items (N). A CVI greater than 0.70 confirmed satisfactory content coverage for the questionnaire items.

A pretest preceded full deployment to confirm response consistency and refine ambiguous items. This step confirmed that the questionnaire measures the intended concepts clearly and that responses are stable across participants, with a target internal consistency level above 70%. Cronbach's alpha evaluated internal consistency for each scale, targeting coefficients that reach or exceed conventional acceptance thresholds for applied research contexts.

The reliability analysis, measured using Cronbach's alpha, indicates a strong level of internal consistency for

all variables in the study. A reliability coefficient above 0.70 is generally considered acceptable, and in this case, all variables exceed this threshold, demonstrating high reliability. Resources Planning ($\alpha = 0.833$) suggests that the five items measuring this variable are highly consistent. Operational Planning ($\alpha = 0.828$) shows strong internal reliability, indicating that the items effectively measure the construct. Monitoring and Evaluation Planning ($\alpha = 0.822$) also reflects good reliability, suggesting that the related items provide a consistent measure. Performance of Rwanda Dairy Development Project ($\alpha = 0.837$) has the highest reliability score, reinforcing the consistency of its measurement.

Overall, the Cronbach's alpha values confirm that the questionnaire items for each variable are reliable and suitable for assessing the intended constructs.

3.6 Data Analysis

The study deployed descriptive statistics, bivariate correlation analysis, and a linear regression model. SPSS version 27 supported computation of frequency, percentage, mean, and standard deviation.

Bivariate correlation analysis tested hypotheses concerning relationships between a single dependent variable and a single independent variable, supplying a Pearson correlation coefficient r ranging between negative one and positive one to express direction and magnitude, with significance evaluated through a 2-tailed probability threshold set at 0.05.

Linear regression model estimation covered indicators in the conceptual framework. The coefficient measured effect size within the following regression equation: The

coefficient measured effect size r using the following regression equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

Y = Project Performance
 X_1 = Resources Planning,
 X_2 = Operational Planning,
 X_3 = Monitoring and Evaluation Planning.
 β_0 = Constant
 $\beta_{1,2,3}$ = Coefficients of the model
 e = error term

3.7 Ethical Considerations

Expertise, dedication, and integrity governed all procedures. Autonomy, anonymity, confidentiality, and informed consent received strict attention. Prior to questionnaire completion, consent was secured. All information remained protected. Questionnaires excluded names and titles to maintain anonymity.

4. Results and Discussions

The section presents and interprets the study findings on project planning practices and their relationship with the performance of the Rwanda Dairy Development Project.

4.1 Response Rate

A high response rate is fundamentally essential for ensuring that survey findings accurately reflect the true views of the target population and provide a highly reliable basis for statistical inference regarding the Rwanda Dairy Development Project in Ruhango District.

Table 1: Response Rate

Questionnaires	Frequency	Percentage (%)
Returned Complete	187	97.9
Unreturned	4	2.1
Total	191	100.0

Source: Field Data, May 2026

The findings in Table 1 indicate the response rate for the survey administered to the specific participants of this dairy initiative. Out of the distributed questionnaires, 187 were returned completely filled, representing an impressive 97.9% response rate. A remarkably small fraction, amounting to 4 unreturned instruments, constituted only 2.1% of the targeted sample. This exceptional level of participation firmly confirms that the collected data is highly robust, fully representative, and perfectly suitable for drawing valid, generalizable conclusions about the planning dynamics currently driving the district's dairy project.

4.2 Inferential Statistics

This profound analytical section systematically transitions from simply summarizing the raw field data to making robust, scientifically sound statistical inferences regarding the specific causal relationships between the independent and dependent variables. Specifically, it rigorously employs Pearson correlation analysis to establish the underlying strength and specific direction of the empirical associations, alongside running multiple linear regression analysis to conclusively determine the exact predictive power of resources,

operational, and monitoring planning practices on the overall execution and performance of the Rwanda Dairy Development Project in Ruhango District.

4.2.1 Correlation Analysis

This complex analytical subsection deeply explores the precise bilateral statistical associations specifically existing between the independent planning practice constructs and the ultimate dependent project

performance outcome. By meticulously executing a rigorous Pearson correlation analysis, this crucial section explicitly measures exactly how strongly resources planning, operational planning, and structured monitoring and evaluation planning correlate with the successful physical execution and overall systemic performance of the Rwanda Dairy Development Project in Ruhango District, explicitly utilizing a strict 0.05 significance level to statistically validate all advanced claims.

Table 2: Correlations

		Resources Planning	Operational Planning	Monitoring and Evaluation Planning	Performance of Project
Resources Planning	Pearson Correlation	1	.606**	.673**	.815**
	Sig. (2-tailed)		.000	.000	.000
	N	187	187	187	187
Operational Planning	Pearson Correlation	.606**	1	.783**	.752**
	Sig. (2-tailed)	.000		.000	.000
	N	187	187	187	187
Monitoring and Evaluation Planning	Pearson Correlation	.673**	.783**	1	.775**
	Sig. (2-tailed)	.000	.000		.000
	N	187	187	187	187
Performance of Project	Pearson Correlation	.815**	.752**	.775**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	187	187	187	187

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data, May 2026

The findings in Table 2 display the Pearson correlation matrix capturing the relationships between the specific planning practices and project performance. The relationship between resources planning and the performance of the project shows a very strong positive correlation, indicated by a Pearson coefficient of $r = 0.815$. This association is statistically significant with a p-value of 0.000, which is well below the 0.05 significance level. This confirms that as the readiness and allocation of materials improve, the overall success of the project drastically increases. The exceptionally strong positive correlation discovered between resources planning and project performance is deeply consistent with the empirical modeling performed by Kimanuka (2024), who demonstrated that intensive resource scheduling, precise skill assessments, and transparent budgeting directly explain a massive percentage of performance variance, thereby positioning structured resource readiness as a central, undeniable determinant of delivery success.

The connection between operational planning and project performance demonstrates a strong positive correlation, highlighted by a coefficient of $r = 0.752$. The

relationship is highly significant given the p-value of 0.000 against the 0.05 threshold. This reveals that enhanced daily coordination and clear task guidance directly translate to higher quality and timely project outputs. The highly significant correlational outcomes linking operational planning to overall execution success perfectly align with the detailed analysis provided by Habiyaemye (2023), who firmly established that tighter operational plan quality, encompassing robust work-breakdown structures and rigorous procurement calendars, substantially raises timeliness and cost adherence while successfully stabilizing performance within highly complex infrastructural and commercial environments.

The association between monitoring and evaluation planning and project performance exhibits a strong positive correlation, returning a Pearson coefficient of $r = 0.775$. The test is statistically significant with a p-value of 0.000, easily clearing the 0.05 level. This indicates that rigorous progress tracking and improvement planning are deeply intertwined with achieving project goals efficiently. The positive and robust statistical correlation observed between monitoring routines and project success strongly resonates with the conclusions

drawn by Karuga et al. (2024), who identified that establishing upfront monitoring checkpoints, variance tracking mechanisms, and explicit progress measurement rules actively enhances empirical evidence on advancement, enabling immediate corrective actions that decisively stabilize time and cost outcomes.

Overall, the correlation analysis confirms that all three planning dimensions share significant, strong, and positive relationships with the performance of the dairy project. There are no weak or insignificant links, proving that structured preparation at every phase is critical to execution success.

4.2.2 Regression Analysis

While the previously presented correlation analysis sufficiently established the mere presence of bilateral relationships, this specific advanced regression analysis subsection is fundamentally dedicated to determining the exact explanatory power and unique predictive weight of the combined independent variables. By systematically and rigorously interpreting the specific Model Summary, the detailed Analysis of Variance (ANOVA), and the final Coefficients table, this analytical section strictly evaluates exactly how resources, operational, and evaluation planning collectively and independently drive the definitive success and measurable performance of the Rwanda Dairy Development Project in Ruhango District.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.887 ^a	.786	.783	.18641	1.727

a. Predictors: (Constant), Monitoring and Evaluation Planning, Resources Planning, Operational Planning
b. Dependent Variable: Performance of Project

Source: Field Data, May 2026

The results in Table 3 detail the Model Summary for the regression analysis. The multiple correlation coefficient (R) stands at 0.887, signifying a very strong collective relationship between the combined planning practices and project performance. The R Square value is 0.786, which reveals that 78.6% of the variations in the performance of the dairy project can be explicitly explained by resources, operational, and M&E planning. The Adjusted R Square sits closely at 0.783, confirming that the model remains highly reliable even when adjusted for the number of predictors. The Durbin-Watson statistic is 1.727, which falls well within the acceptable range (1.5 to 2.5), indicating that there is no threatening autocorrelation in the residuals. This confirms that the predictive model is robust, accurately fitted, and statistically sound for forecasting outcomes.

The results are supported by Project Management Institute (2021), who explained that project performance improves when planning, project work, measurement,

and delivery practices operate as connected performance domains rather than isolated activities. This means that resource planning, operational planning, and monitoring and evaluation planning can jointly strengthen project performance when they guide decision-making, control execution gaps, and support timely corrective action within the dairy project.

The outcomes also align with Kerzner (2022), who emphasized that effective project performance depends on the systematic integration of planning, scheduling, controlling, and continuous performance review. This perspective supports the idea that a strong predictive model is achieved when project planning practices are properly coordinated, because resource availability, operational discipline, and monitoring feedback help project managers forecast implementation results and improve delivery reliability.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.375	3	7.792	222.629	.000 ^b
	Residual	6.359	183	.035		
	Total	29.734	186			

a. Dependent Variable: Performance of Project

b. Predictors: (Constant), Monitoring and Evaluation Planning, Resources Planning, Operational Planning

Source: Field Data, May 2026

The outcomes in Table 4 display the Analysis of Variance (ANOVA) which tests the overall significance of the regression model. The F-statistic is recorded at a remarkably high 222.629. This large F-value is accompanied by a significance level (Sig.) of 0.000,

which is drastically lower than the critical 0.05 p-value threshold. This proves that the combination of resources, operational, and monitoring planning is a highly significant predictor of project performance. The model is therefore deemed an excellent fit for the data, securely

rejecting the possibility that these results occurred by chance.

The powerful explanatory capacity demonstrated by the R Square metric, alongside the highly significant F-statistic from the ANOVA results, is fundamentally supported by the comprehensive analytical models developed by Ariana et al. (2025), who confirmed that the combined intensity of planning activities and strategic organizational practices serves as an incredibly potent driver of project performance, effectively predicting the majority of variations in delivery timeliness and overall stakeholder satisfaction.

Furthermore, the overall robustness of this regression model strongly aligns with the empirical observations recorded by Miladi and Ammari (2024), who emphasized that when strategic planning variables such as resource allocation, operational alignment, and systematic tracking are tested collectively, they exhibit profound statistical explanatory power over performance, proving that holistic planning is an absolute prerequisite for maximizing financial and non-financial project outcomes.

Table 5: Coefficients

		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.255	.159		1.604	.111		
	Resources Planning	.521	.049	.497	10.633	.000	.531	1.883
	Operational Planning	.223	.045	.275	4.956	.000	.375	2.667
	Monitoring and Evaluation Planning	.196	.052	.225	3.769	.000	.324	3.086

a. Dependent Variable: Performance of Project

Source: Field Data, May 2026

The coefficient measured effect size r using the following regression equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

Y = Project Performance

X_1 = Resources Planning,

X_2 = Operational Planning,

X_3 = Monitoring and Evaluation Planning.

α = Constant

β = Coefficients of the model

e = error term

The statistics in Table 5 exhibit the Unstandardized and Standardized Coefficients that break down the individual impact of each variable. The adopted model for analysis

was structured as follows: $Y = 0.255 + 0.521X_1 + 0.223X_2 + 0.196X_3 + \epsilon$.

Overall, the coefficient summary proves that all three independent variables are positive, significant predictors of project success without violating multicollinearity assumptions. Resources planning exerts the heaviest predictive weight on the dependent variable, followed by operational and M&E planning.

4.3 Decision on Null Hypotheses

This crucial analytical subsection systematically and transparently presents the definitive statistical decisions made regarding the previously formulated null hypotheses of the study. Relying strictly and objectively on the precise p-values derived directly from the advanced multiple linear regression coefficient outcomes, this section clearly concludes whether resources planning, operational planning, and detailed monitoring planning possess a statistically significant predictive effect on the overarching structural performance of the Rwanda Dairy Development Project operating heavily in Ruhango District.

Table 6: Decision on Null Hypotheses

Null Hypotheses	P-Value	Decision
H ₀ 1: Resources planning has no significant effect on performance of Rwanda Dairy Development Project in Ruhango District.	Sig. = 0.000	Rejected
H ₀ 2: Operational planning has no significant effect on performance of Rwanda Dairy Development Project in Ruhango District.	Sig. = 0.000	Rejected
H ₀ 3: Monitoring and evaluation planning has no significant effect on performance of Rwanda Dairy Development Project in Ruhango District.	Sig. = 0.000	Rejected

Source: Researcher, 2026

The p-values for resources planning (0.000), operational planning (0.000), and monitoring and evaluation planning (0.000) are all significantly below the 0.05 threshold. This unequivocally confirms that structured planning practices are not merely administrative formalities but are statistically proven drivers of project performance in the dairy sector.

5. Conclusions and Recommendations

The section presents conclusions drawn from the study findings and recommendations intended to strengthen project planning practices and improve project performance.

5.1 Conclusion

These powerful conclusions definitively state the precise extent to which deeply structured project planning practices serve as completely indispensable and mathematically proven drivers for the successful implementation and continuous high performance of the Rwanda Dairy Development Project operating heavily in Ruhango District.

Regarding the effect of resources planning, it is concluded that this practice serves as the most influential foundation for project success within the dairy sector. The robust predictive relationship proves that when physical materials, financial inputs, and human resources are rigorously identified and optimally allocated prior to execution, the project inherently avoids costly delays and severe capacity shortages.

Concerning operational planning, the study concludes that it acts as the critical bridge between strategic intent and practical execution. The significant positive influence establishes that clear role definitions, daily coordination, and preemptive problem anticipation are fundamental for maintaining steady momentum and upholding quality standards on the ground.

For the effect of monitoring and evaluation planning, it is concluded that these activities guarantee the

sustainability and adaptability of project outcomes. The evidence confirms that when projects lock in baseline indicators and commit to routine progress reviews, they empower management teams to institute timely corrective measures that secure the overarching project scope.

The research conclusively demonstrates that comprehensive project planning practices are indispensable for the high performance of agricultural development initiatives. When resources, operations, and evaluation mechanisms are planned cohesively, they form a resilient framework that virtually guarantees adherence to timelines, budgets, and beneficiary satisfaction expectations.

5.2 Recommendations

Based entirely on the robust empirical evidence logically gathered and rigorously analyzed throughout this comprehensive study, the following highly practical, explicitly targeted recommendations are definitively provided to significantly enhance future project execution.

1. Project leadership should formalize a centralized digital resource registry to track material inventory and vehicle allocation in real-time. This will eliminate minor bottlenecks in the supply chain and further standardize the distribution of veterinary and logistical support across all district cooperatives.
2. The administrative authorities overseeing the dairy value chain are encouraged to institute mandatory, cross-functional weekly operational briefings. These short alignment meetings will reinforce role clarity and ensure that rapidly changing field conditions, such as weather impacts on feeder roads, are managed proactively.
3. Stakeholders involved in funding and oversight should mandate the inclusion of community-level beneficiaries in quarterly monitoring and evaluation panels.

4. Project managers should enforce continuous capacity-building workshops focused strictly on advanced scheduling techniques for field staff.
5. Local cooperative leaders should establish decentralized, peer-to-peer resource-sharing agreements. By allowing neighboring farmer clusters to legally and efficiently pool their chilling equipment or transport during peak seasons, the project can maximize asset utilization without requiring additional central funding.

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