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Effect of Resource Management Practices on Project Performance: A Case of Rice Meal Project in Rusizi District, Rwanda

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Abstract: *The general objective of this study is to assess the effect of project resource management practices on the performance of Rice Meal project in Rusizi District. The population of the study was 346. A sample size of 186 was calculated using Slovin's formula. Statistical Package for Social Sciences (SPSS) 25 was employed to analyze collected data, applying descriptive, correlation and regression analysis. Specifically, a unit increase in human resource management results in a 0.277 increase in project performance (B = 0.277, t = 6.442, p = 0.000), confirming its significance. Similarly, a unit increase in financial resource management leads to a 0.245 increase in project performance (B = 0.245, t = 6.622, p = 0.000). A unit increase in material resource management contributes to a 0.362 increase in project performance (B = 0.362, t = 9.282, p = 0.000), indicating the highest effect among the variables. Lastly, a unit increase in technology resource management results in a 0.206 increase in project performance (B = 0.206, t = 4.478, p = 0.000), confirming its significant role in enhancing project outcomes. The study recommended that project managers focus on enhancing human resource management, financial oversight, material procurement, and technology utilization to improve the performance of Rice Meal Project.*

Keywords: *project resource management practices, human resource management, financial resource management, material resource management, technology resource management, project performance.*

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1. Introduction

Project resource management has become a critical focus globally as nations strive for sustainability and efficiency in utilizing their natural assets. These efforts not only address environmental challenges but also support economic growth and social well-being. Resource management in Germany is known for its strict adherence to efficiency and sustainability standards, supported by a strong regulatory and legal framework. Reducing resource use, increasing resource productivity, and promoting recycling are the main goals of Germany's Resource Efficiency Program (ProgRess). Decoupling economic development from resource usage and environmental impact is the goal of the initiative, which is in line with the Circular Economy Action Plan of the European Union (Kirikkaleli & Ali, 2024).

Germany excels in project management, where sustainable practices and advanced technologies ensure efficient project execution. Notable projects like Stuttgart 21 emphasize modern transportation infrastructure and sustainability. Elbphilharmonie Hamburg highlights architectural innovation alongside energy efficiency. Large-scale housing developments in Berlin focus on modular eco-friendly materials. This holistic resource management strategy boosts Germany's

economic resilience and worldwide competitiveness (Stanitsas & Kirytopoulos, 2023).

The French approach to resource management is greatly impacted by its commitment to ecological transition and sustainability. Many French policies strive to conserve natural resources, reduce environmental damage, and promote sustainable development. France integrates resource-efficient practices, emphasizing the use of recycled materials and minimizing waste. Projects like the Grand Paris Express prioritize sustainable resource management through eco-friendly designs and energy-saving technologies. Urban developments, such as Lyon Confluence, focus on optimizing water and energy use, reflecting France's commitment to reducing resource consumption. Renovation projects also adopt circular economy principles, ensuring long-term sustainability. These measures reinforce France's leadership in environmental sustainability and resource management in Europe (Prasad & Smol, 2023).

In Sweden, resource management is strongly embedded in national policy and social norms, demonstrating a cultural commitment to environmental care and sustainable development. Sweden emphasizes sustainable practices by using eco-certified materials and energy-efficient designs. The nation promotes timber construction, as seen in the Sara Cultural Centre, leveraging renewable materials to reduce carbon footprints. Renovation and urban planning projects also align with circular economic principles, ensuring minimal waste and resource efficiency. Sweden's comprehensive resource management strategy fosters environmental sustainability, economic development, innovation, and social well-being, offering an example for other countries seeking a sustainable future (Spassova, 2022).

Resource management is a major topic in South Africa owing to the country's different ecosystems and variable levels of resource availability. South Africa's construction project resource management prioritizes sustainable practices, with initiatives like the Green Building Council of South Africa promoting environmentally friendly construction methods. Projects such as the Cape Town Stadium and the Nelson Mandela Children's Hospital exemplify the use of sustainable materials and energy-efficient designs. Furthermore, regulatory frameworks like the Construction Industry Development Board (CIDB) guide contractors in resource-efficient practices, addressing challenges related to resource scarcity and urbanization while fostering local economic development. In spite of all this, South Africa is still struggling to adopt efficient resource management methods because of socioeconomic inequality and infrastructure shortages (Agbajor & Mewomo, 2024).

Nigeria's resource management is a challenging subject owing to the country's large natural resources and fast population expansion. In Nigeria, resource management is guided by policies aimed at promoting sustainable practices and efficient resource utilization. The National Building Code emphasizes the need for environmentally friendly construction methods and materials, addressing challenges such as waste generation and energy consumption. Efforts to improve building standards and encourage the use of local materials are essential for enhancing sustainability. Additionally, initiatives aimed at reducing the carbon footprint of construction projects focus on integrating renewable energy solutions and promoting efficient waste management practices, contributing to the overall goal of sustainable development in the sector. Corruption, insufficient financing, and socio-political instability are some of the obstacles to successful management of Nigeria's natural resources, even with these frameworks in place (Abdullah *et al.*, 2021).

Effective resource management is fundamental to Kenya's sustainable development agenda and environmental protection initiatives. Kenya's approach to construction project resource management emphasizes sustainable practices in response to water security challenges, climate variability, and population growth. The National Construction Authority promotes guidelines that integrate water conservation strategies into building designs. Projects like the Nairobi Expressway reflect this commitment by utilizing eco-friendly materials and implementing water-efficient systems. Additionally, the country is focusing on renewable energy sources, such as solar and geothermal power construction activities, enhancing energy efficiency while minimizing environmental impacts. However, issues like deforestation and land degradation continue to pose significant challenges to effective resource management in the construction sector (Odhiambo Ochola, 2024).

Resource management within Rwanda plays a pivotal role in optimizing project performance. The strategic integration of project scope, resource allocation, and risk management significantly enhances construction outcomes. Strong correlations among these planning dimensions underscore their importance in achieving project objectives, fostering sustainability, and effectively addressing challenges in urban development, particularly in Kigali City. This holistic approach promotes enhanced efficiency and quality in housing construction endeavors (Utuje & Kwena, 2024).

Moreover, the Advancing Citizens Engagement Project by Spark Microgrants in Rusizi District highlights the critical importance of effective project resource management practices in enhancing overall project performance. Emphasizing meticulous resource planning, efficient allocation, and continuous monitoring, the initiative significantly improves cost

control and operational efficiency. Furthermore, the project's commitment to training and capacity-building for team members enhances their competencies, leading to more effective citizen engagement and sustainable community development in the region (Kabeza *et al.*, 2024).

The execution of rice production encounters several obstacles which block worldwide achievement especially within Rwandan settings. Wekundah *et al.* (2021) document environmental changes and poor management together with limited technology access as critical elements which impact rice production substantially. Rice production initiatives in Rwanda face barriers for success because farmers deal with limited infrastructure access and finance and lack suitable training (Munyaneza *et al*., 2022) while the economy heavily depends on agricultural activities. Research shows that resource management problems affect 42% of Rwandan farmers since they directly reduce project performance and productivity outcomes (Nishimwe & Murekezi, 2023).

The effective implementation of agricultural projects encounters major barriers because of resource management difficulties. The Rice Meal Project encounters major hurdles in the management of human, financial, material and technological resources. Nzeyhikwana and Niyonzima (2023) identified leadership qualities along with team organization methods as crucial elements stopping project achievement. The project's failure to achieve its goals has been shown to stem from budgeting problems combined with financial monitoring inadequacies.

The Rice Meal Project in Bugarama emerged because of these identified issues and the fundamental requirement to develop local agricultural outputs. The SODAR Group Ltd established this project through their ambition to build food security programs and boost financial and social standing within Rusizi District. The project established sustainable rice farming conditions by implementing resource conservation methods. Insufficient training for the project team and unpredictable climate patterns and inadequate infrastructure combined to undermine the project's objectives (Ndayambaje *et al*., 2022).

The study performed by Kamuhanda (2020) analyzed agricultural productivity under climate change impacts without investigating resource management principles in detail. Mujawayezu (2021) looked at how government policies drive agricultural success in Rwanda while avoiding the discussion of operational management obstacles. Iyamuremye (2023) analyzed agricultural project scalability, however his study failed to establish direct connections between operational difficulties and resource management practices. Previously mentioned research did not assess effect of resource management practices on performance of rice production projects in Rwanda. This research project bridged a knowledge gap by studying how resource management practices affect the performance of Rice Meal Project of SODAR Group Ltd in Rusizi District.

1.1 Objective of the study

The general objective of the study is to assess the effect of project resource management practices on performance of Rice Meal projects in Rusizi District, Rwanda.

The study had the following objectives:

1. To determine the effect of human resource management on the performance of Rice Meal project in Rusizi District.
2. To evaluate the effect of financial resource management on the performance of Rice Meal project in Rusizi District.
3. To analyze the effect of material resource management on the performance of Rice Meal project in Rusizi District.
4. To assess the effect of technology resource management on the performance of Rice Meal project in Rusizi District.

2. Literature Review

The study utilized Stakeholder Theory, Resource-Based View Theory, and Human Capital Theory as its theoretical frameworks.

2.1 Stakeholder Theory

Stakeholder Theory, first proposed by Edward Freeman in 1984, asserts that firms should consider the interests and well-being of all stakeholders, not just shareholders. Stakeholders are individuals or groups whose interests are influenced by the activities of an organization. This includes employees, customers, suppliers, governments, and the public. This idea challenges the conventional emphasis on shareholder primacy, arguing that prioritizing the interests of all stakeholders results in more sustainable and ethical corporate operations. The reasoning is that firms that engage and satisfy their stakeholders generate more value and have more long-term success (Gutterman, 2023).

According to Stakeholder Theory, firms should maintain frequent and transparent contact with their stakeholders. This entails identifying stakeholder requirements, expectations, and concerns and incorporating this information into corporate decision-making processes. This inclusive approach makes stakeholders feel appreciated and respected, which may increase their loyalty and support. Organizations that actively engage with their workers and include them in decision-making may boost job happiness and productivity, resulting in higher overall performance (Shah & Guild, 2022).

Stakeholder Theory promotes ethical behaviors and societal responsibility. Organizations are expected to be not just lucrative, but also socially and ecologically responsible. This larger view on value creation considers the long-term effects of corporate actions on society and the environment. Ethical practices may also have a beneficial reputational impact, as responsible businesses acquire the confidence and favor of customers and the general public. As a result, this may lead to competitive advantages such as increased consumer loyalty and the capacity to recruit and retain top people (Mahajan *et al.*, 2023).

Stakeholder theory advocates the concept of stakeholder-oriented corporate governance. This entails creating governance structures and regulations that promote accountability, justice, and openness. Effective governance builds confidence and collaboration among stakeholders, resulting in more strong and resilient organizations. Organizations may build long-term value by balancing the requirements and interests of multiple stakeholders (Yoshikawa *et al.*, 2021).

The study used Stakeholder Theory to assess how engaging key stakeholders, such as suppliers, contractors, and workers, enhances project resource management and performance. This theory guided the analysis of how frequent communication, stakeholder involvement, and addressing their concerns can lead to better resource utilization, improved timelines, and higher project success.

2.2 Resource-Based view theory

Wernerfelt's 1984 Resource-Based View (RBV) thesis, amended by Barney in 1991, assists organizations in understanding their competitive advantage. RBV thinks that a company's internal skills and resources determine success, as opposed to traditional perspectives that concentrate on market conditions or competition. According to this idea, a firm's potential to outperform competitors is determined by its unique combination of tangible and intangible resources, including physical assets, brand reputation, and intellectual capital (Putra *et al.*, 2021).

Physical resources include equipment and buildings, whereas human resources comprise employee skills and expertise, as well as organizational culture and processes. To maintain a competitive advantage, a resource must meet four VRIO criteria: value, rarity, inimitability, and organization. To assist a firm, capitalize on opportunities or eliminate risks, resources must be rare, difficult to replicate, and well-organized (Andersson & Haque, 2024).

Resource-Based View in strategic planning enables businesses to properly analyze and align their internal capabilities with strategic objectives. Focusing on strengths and using unique resources may help enhance operational efficiency and market positioning. Proponents argue that a robust resource base may help firms overcome external challenges, notwithstanding RBV's limitations in adjusting to changing market circumstances. As a result, RBV remains an important strategic management framework for businesses seeking to optimize internal resources and gain a sustainable competitive advantage (Adama *et al.*, 2024).

The study applied RBV Theory to examine how the project's unique internal resources, such as skilled labor, equipment, and materials, contribute to achieving performance goals. By focusing on rare and valuable resources, this theory helped to explain how efficient resource allocation can lead to sustained competitive advantage in Rice Meal project in Rusizi District.

2.3 Human Capital Theory

Human Capital Theory, created by economists Gary Becker and Theodore Schultz in the mid-twentieth century, explores the economic value of investing in education, training, and health. According to the idea, human capital, which includes skills, knowledge, and experiences, promotes productivity and economic growth. Human capital investments, like those made by firms to enhance profits, provide long-term economic benefits (Goldin, 2024).

According to Human Capital Theory, education and training increase job opportunities, income, and employability. Educated individuals earn more and are less likely to be unemployed. Health investments increase productivity because healthy individuals are more productive and engaged (Indrawati & Kuncoro, 2021).

Despite its relevance, Human Capital Theory has been critiqued for oversimplifying the complex relationship between education and economic success. Its detractors argue that it overlooks the social, cultural, and institutional factors that influence success. However, the idea continues to persuade governments and organizations to invest in education and skills to increase economic development and social mobility. Human capital development assists organizations and communities in developing a skilled workforce capable of adapting to changing economic conditions and maintaining prosperity (Wolhuter & Niemczyk, 2023).

The study employed Human Capital Theory to explore the effect of skilled workforce development in project performance. It assessed how investments in staff training, knowledge enhancement, and health initiatives improve worker productivity, ensuring optimal resource management and successful completion of Rice Meal project in Rusizi District.

3. Methodology

This section describes the study methodology, including design, data collecting methodologies, and analysis. It

focuses on data collection techniques such as questionnaires and interviews, as well as sampling methodologies designed to achieve representative selection. It also describes possible issues like ethical consideration and limitations.

3.1. Research Design

This study used both descriptive and correlational research design. Data were collected quantitatively using questionnaires, and descriptive analytical techniques were applied to interpret the results. The combination of quantitative and qualitative approaches allowed for a comprehensive understanding of the variables under investigation and their interrelationships.

3.2. Study Population

The population of the study was 346 including 6 Project managers, 34 Project field staff, 22 SODAR Agri dealers and 284 Farmers representatives of SODAR Group Ltd of Rusizi District.

Table 1: Population of the study

Category	Population
Project managers	6
Project field staff	34
SODAR Agri dealers	22
Farmers represents	284
Total	**346**

Source: Researcher (2024)

3.3. Sampling

To compute the sample size for this research, Slovin's formula was used as it provides a straightforward method for determining the appropriate sample size. The researcher employed the following formula:

$$n = \frac{N}{1 + N(e)^2}$$

When applied to the sample provided, this formula yields a sample size of 186

$$n = \frac{346}{1 + 346\ (0.05)^2} = \frac{346}{1 + 346\ (0.0025)}$$
$$= \frac{346}{1 + 0.865} = \frac{346}{1.865} = 324.9$$
$$= 186$$

Table 2: Sample size

Category	Population	Sample size
Project managers	6	3
Project field staff	34	18
SODAR Agri dealers	22	12
Farmers represents	284	153
Total	**346**	**186**

Source: Researcher (2024)

The study used simple random sampling and it was effective as target population is homogeneous in terms of the characteristics. Because every member of the population has an equal chance of being selected, this method reduces selection bias.

3.4 Data Collection Instruments

Muzari *et al.* (2022) describe a questionnaire as a tool for collecting data through structured questions, enabling respondents to share their experiences or expertise independently. It facilitates both quantitative and qualitative data collection for systematic analysis. In this study, the questionnaire gathered quantitative data on resource management effectiveness in Rice Meal project in Rusizi District.

Braun and Clarke (2022) state that documentation is a method by which the research's sources are officially acknowledged. Documents, studies, publications, journals, and policy reports pertaining to the subject have been thoroughly studied and reviewed. Since this is a critical review of the literature that seeks global perspectives to provide a comparative framework for readers' analysis and evaluation, the researcher employed documentary approach to gather secondary material.

3.5. Pilot Study

According to Shakir and Rahman (2022), a pilot study in research is a preliminary, small-scale investigation conducted before the main research project to assess and refine the research design, methods, instruments, and procedures that were used in the larger study. The main purpose of a pilot study is to identify and solve possible concerns, obstacles, or ambiguities in the research design, thereby improving the quality and dependability of the larger study. Researcher modified the equipment or processes to address any deficiencies identified in the pilot study based on the perspectives gathered from it. Pilot study was conducted on COTCORI in Rusizi District with 33 respondents representing 10% of sample size.

SPSS calculated Cronbach's alpha to guarantee the dependability of the research tool. In most cases, a reliability level between 0.7 and 1.0 is considered good. An alpha coefficient of 0.7 or higher was considered statistically significant for this study.

Where:

0.9- 1.0: Excellent internal consistency
0.8- 0.9: Good internal consistency
0.7- 0.8: Acceptable internal consistency
$\alpha < 0.7$: Low internal consistency, the instrument may not be reliable.

Table 3:Reliability Results

Variables	Cronbach's Alpha	N of Items
Human resource management	.822	4
Financial resource management	.783	4
Material resource management	.797	4
Technology resource management	.801	4
Performance of Project	.814	4
Overall reliability coefficient value	**.803**	**20**

Source: Research Findings (2025)

For this study, all items in variables under the study have alpha coefficient greater than 0.7 which is considered statistically significant for this study.

3.6. Data Analysis

Muzari *et al.* (2022) describe data analysis as the systematic process of cleaning, transforming, and modeling data to extract insights and support decision-making. This study employed both descriptive statistics and regression analysis to interpret the data. Descriptive analysis used frequencies, proportions, and percentages to summarize variables, while correlational analysis assessed the strength and relevance of relationships between independent and dependent variables. Statistical methods guided the researcher in uncovering patterns, relationships, and trends. By applying these analytical techniques, the researcher aims to develop meaningful interpretations that contribute to a deeper understanding of resource management in the project context.

According to Chen and Cheng (2021), descriptive statistics are statistical methods used to summarize and organize data in a meaningful way, providing a clear overview of the main characteristics of a dataset. The mean and the standard deviation were employed to quantify the degree of variability. The mean was calculated using the intervals and equivalences stated below.

Inferential statistics, including correlation analysis, explored the relationships between project resource management variables human, financial, material, and technology resources and project performance.

4. Results and Discussion

This section presents the findings of the study based on the data collected from the field. The analysis is centered on the overall objective of the study.

4.1 Response Return Rate

The response rate is calculated as follows:

Response Rate= (Number of Responses/ Total Distributed Surveys) ×100

Response Rate = (172/186) ×100=92.47

The response rate of 92.47% is exceptionally high, indicating strong participant engagement and a well-administered data collection process. This high response rate enhances the reliability and generalizability of the findings, as it minimizes non-response bias. It suggests that the majority of the target respondents found the survey relevant and were willing to provide input.

4.2 Inferential Statistics

The objective of inferential statistics is to derive inferences from a statistical sample. Correlation analysis, hypothesis testing, confidence intervals, and regression analysis exemplify methods used in inferential statistics.

4.2.1 Correlation analysis

The correlation analysis involved examining the relationship between the independent and dependent variables of the study. The researcher conducted the

Pearson correlation analysis, as detailed in Table 4 below.

Table 4: Correlation matrix

		Human resource management	Financial resource management	Material resource management	Technology resource management	Performance of Project
Human resource management	Pearson Correlation	1	.461**	.490**	.533**	.716**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	172	172	172	172	172
Financial resource management	Pearson Correlation	.461**	1	.277**	.546**	.634**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	172	172	172	172	172
Material resource management	Pearson Correlation	.490**	.277**	1	.460**	.701**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	172	172	172	172	172
Technology resource management	Pearson Correlation	.533**	.546**	.460**	1	.692**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	172	172	172	172	172
Performance of Project	Pearson Correlation	.716**	.634**	.701**	.692**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	172	172	172	172	172

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

Source: Field data, 2025

Table 4 presents the correlation between human, financial, material, and technology resource management and the performance of Rice Meal Project in Rusizi District. Human resource management exhibits a strong positive correlation with project performance ($r = 0.716$, $p<0.05$), indicating a significant effect. The findings align with Ghattas et al. (2022), who highlighted HRM practices such as training and leadership influence project performance. Their study indicated the importance of HRM for cost and time efficiency, consistent with the Rice Meal project outcomes.

Financial resource management shows a moderate positive correlation with project performance ($r = 0.634$, $p<0.05$), demonstrating its essential role. It is consistent with Kamau et al. (2023), who emphasized the significance of financial planning in improving project stability. Their study indicated that financial practices enhance project success, aligning with the results observed in the Rice Meal project.

Material resource management has a strong positive correlation with project performance ($r = 0.701$, $p<0.05$), confirming its substantial impact. The findings resonate with Acido and Kilongkilong (2022), who mentioned that material resource allocation plays a key role in project success. Their study indicated that proper resource allocation directly impacts project performance, mirroring the results found in the Rice Meal project.

Technology resource management exhibits a strong positive correlation with project performance ($r = 0.692$, $p<0.05$), highlighting its contribution. The findings are consistent with Kumari (2023), who highlighted the role of technology in project management. Their study indicated that technology adoption contributes to project success, which is reflected in the positive correlation found in the Rice Meal project.

4.2.2 Regression analysis

The multiple regression analysis was conducted to test the study hypotheses by assessing the contribution of independent variables to the dependent variable. It aims to determine the extent to which a single dependent variable can be predicted from a set of independent variables. Table 5 presents the model summary of the multiple regression analysis.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.894[a]	.798	.794	.14819	1.674

a. Predictors: (Constant), Technology resource management, Material resource management, financial resource management, Human resource management

b. Dependent Variable: Performance of Project

Source: Field data, 2025

The model summary in Table 5 presents the regression analysis results, indicating a strong relationship between the independent variables and project performance. The R Square value of 0.798 demonstrates that approximately 80% of the variation in project performance is explained by the four resource management components. The Durbin-Watson statistic of 1.674 ensures that autocorrelation among the residuals is not significant, supporting the validity of the regression model.

The findings are consistent with Kirikkaleli and Ali (2024), who highlighted the importance of resource management in achieving efficiency and sustainability. Their study indicated that resource management contributes to improved performance and environmental sustainability. Similarly, the Rice Meal project's performance aligns with these findings, as the regression analysis shows a strong relationship between resource management and project performance, emphasizing the critical role of effective resource management in achieving project success and sustainability. Both studies demonstrate that efficient resource use is crucial for performance improvement.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.523	4	3.631	165.045	.000[b]
	Residual	3.668	167	.022		
	Total	18.190	171			

a. Dependent Variable: Performance of Project

b. Predictors: (Constant), Technology resource management, Material resource management, financial resource management, Human resource management

Source: Field data, 2025

The ANOVA results in Table 6 show the statistical significance of the regression model. The F-value of 165.045, with a p-value of 0.000<0.05, indicates that the combined effects of human, financial, material, and technology resource management significantly affect project performance.

The findings resonate with Prasad and Smol (2023), who emphasized the significant role of resource management in achieving sustainability and reducing environmental impact. Their study indicated that efficient resource management is crucial for project success, particularly in eco-friendly projects. The Rice Meal project's significant regression results align with this, highlighting the positive effect of resource management on performance. Both studies demonstrate that well-managed resources are essential for enhancing project outcomes and ensuring long-term sustainability in various contexts.

Table 7: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.387	.188		-2.059	.041		
	Human resource management	.277	.043	.286	6.442	.000	.602	1.661
	Financial resource management	.245	.037	.281	6.622	.000	.660	1.515
	Material resource management	.362	.039	.387	9.282	.000	.703	1.423
	Technology resource management	.206	.046	.209	4.478	.000	.559	1.788

a. Dependent Variable: Performance of Project

Source: Field data, 2025

Table 7 presents the regression coefficients, analyzing the specific effects of human, financial, material, and technology resource management on the performance of Rice Meal Project in Rusizi District. The constant value of -0.387 implies that when all resource management variables remain at zero, project performance retains a baseline level of -0.387, though its significance is above 0.05.

Specifically, a unit increase in human resource management results in a 0.277 increase in project performance (B = 0.277, t = 6.442, p = 0.000<0.05), confirming its significance. The findings are consistent with Ihedigbo and Jimoh (2022), who emphasized the significant role of human resource management factors in influencing project performance. Their study indicated that effective HRM practices positively affect project outcomes, similar to the Rice Meal project, where human resource management significantly impacts performance.

Similarly, a unit increase in financial resource management leads to a 0.245 increase in project performance (B = 0.245, t = 6.622, p = 0.000<0.05). The findings align with Odide (2021), who highlighted the critical influence of financial resource management on performance. Their study indicated that effective financial management is essential for achieving optimal outcomes, reflected in the positive influence of financial resource management on the Rice Meal project.

A unit increase in material resource management contributes to a 0.362 increase in project performance (B = 0.362, t = 9.282, p = 0.000<0.05), indicating the highest effect among the variables. The Collinearity Statistics (Tolerance and VIF values) indicate no multicollinearity concerns, as all VIF values are below the critical threshold of 10. The findings resonate with Asefa (2021), who examined the importance of material management practices in construction projects. Their study indicated that material planning, procurement, and waste control significantly influence project performance, similar to the positive effect of material resource management on the Rice Meal project.

Lastly, a unit increase in technology resource management results in a 0.206 increase in project performance (B = 0.206, t = 4.478, p = 0.000<0.05), confirming its significant role in enhancing project outcomes. The findings are consistent with Althoey et al. (2024), who emphasized the role of technology in enhancing resource management through IoT implementation. Their study indicated that technology adoption improves resource management, aligning with the significant contribution of technology resource management to the Rice Meal project.

5. Conclusions and Recommendations

5.1 Conclusions

The primary focus of this study was to investigate the effect of project resource management on the performance of Rice Meal Project implemented by Sodar Group Ltd., specifically examining the impact of various resource-related factors on the project's overall success. The research particularly examined the effects of human resource management, financial resource management, material resource management, and technology resource management on the project's performance. The findings indicated that a significant number of respondents recognized these factors as critical in influencing the project's outcomes.

Respondents expressed strong agreement that human resource management plays a crucial role in determining the performance of Rice Meal Project. They emphasized that having skilled and competent team members, coupled with effective leadership and motivation strategies, not only enhances productivity but also fosters a collaborative environment, ultimately improving the project's success.

Findings regarding the effect of financial resource management were similarly positive, with respondents acknowledging that a well-structured financial management system significantly contributed to the project's success. They noted that efficient budget allocation, cost management, and financial forecasting were critical in ensuring the project was completed within its financial constraints and that resources were utilized effectively.

Material resource management also emerged as another critical factor, with respondents indicating that timely availability of quality materials was essential for smooth project execution. They highlighted effective inventory management, and the proper allocation of materials ensured that the project met its objectives without delays, contributing to higher performance levels.

Lastly, technology resource management was identified as an important element in determining project performance, with respondents agreeing that the integration of technological tools for project management, training, and system optimization played a significant role in streamlining operations. They emphasized that technology-enabled efficiency and accuracy, leading to enhanced decision-making and successful project outcomes.

The findings led to the rejection of the null hypothesis concerning the impact of resource management on the performance of Rice Meal Project. The results demonstrated a strong positive relationship between the factors under study (human resource management, financial resource management, material resource management, and technology resource management) and the project's performance, leading to the rejection of the hypothesis related to the individual factors and confirming their significant influence on the project's success.

5.2 Recommendations

1. Project managers could consider creating a performance management system to monitor and evaluate the impact of human resource practices on the overall success of the Rice Meal project.
2. Project field staff should work closely with the financial team to ensure transparent financial management, helping to maintain accountability and improve the overall performance of the project.
3. Farmers should be trained to utilize technology effectively in rice farming, improving efficiency and productivity in line with the project's goals.

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