

Monitoring and Evaluation Planning and Performance of Rural Electrification Projects in the Central Rift Region, Kenya

Sidney Oduor

*Student, School of Business and Entrepreneurship
Jomo Kenyatta University of Agriculture and Technology, Kenya*

Caleb Odhiambo

*Lecturer, School of Business and Entrepreneurship
Jomo Kenyatta University of Agriculture and Technology, Kenya*

Abstract: Rural electrification projects are aimed to deliver electricity to rural communities, fostering economic development and contributing to overall national economic growth and poverty reduction. These projects are entirely funded by the Kenya national government and are thus expected to adhere to designated project timelines. However, the Auditor General's report (FY 2021/2022) findings indicated that 47% of rural electrification projects encountered delays, stalled, or fell behind schedule, particularly in the Central Rift Region, Kenya. Therefore, this study examined the influence of monitoring and evaluation planning on performance of rural electrification projects in Central Rift Region, Kenya. The study reviewed critical planning theory. A descriptive research design was employed in this study. The target population for this study was the 116 ongoing rural electrification projects in Central Rift Region. Census sampling technique was employed where an accessible population of 116 project managers formed the sample for the study. Findings established that M&E planning affected the performance of rural electrification projects. The regression analysis revealed a coefficient of determination of $R^2=0.495$, indicating that monitoring and evaluation practices accounted for 49.5% of the variation in the performance of rural electrification projects. This demonstrates that M&E planning had a significant effect on the performance of these projects. The study concluded that effective M&E planning is essential for the success of rural electrification projects, as it ensures accurate progress tracking, timely adjustments, and efficient resource use. The study recommended that project managers align M&E plans with project objectives for accurate tracking and timely adjustments, incorporating flexibility to adapt to changing conditions and regularly updating plans.

Keywords: *Monitoring and Evaluation Planning, Project Performance, Rural Electrification Projects*

I. Introduction

Monitoring and evaluation are pivotal components of project management, facilitating ongoing assessment of progress and effectiveness across the project's duration (Del-Río-Carazo, Acquila-Natale, Iglesias-Pradas, & Hernández-García, 2022). A monitoring and evaluation plan includes objectives, metrics, and methods for gathering information and tracking progress and project results. Juanpera, Domenech, Ferrer-Martí, Garzón, and Pastor (2021) found that effective planning ensures alignment of monitoring and evaluation efforts with project objectives, allowing for better decision-making and adaptation to new changes. Involving stakeholders in monitoring and evaluation means involving them throughout the process to gather diverse perspectives and insights and promote transparency (Irfan, Khan, Hassan, Hassan, Habib, Khan, & Khan, 2021). This collaborative approach promotes the credibility of the evaluation outcomes. Rural electrification initiatives in Kenya are pivotal for addressing the energy deficit and driving socio-economic progress in remote regions (Musili & Nyang'au, 2022). These endeavors seek to expand electricity infrastructure to underserved areas, empowering communities and elevating their standard of living. Implemented by government bodies such as the Rural Electrification Authority (REA), diverse programs like the last mile connectivity Project prioritize linking residences, educational institutions, healthcare facilities, and commercial enterprises to the national grid (Chege & Kinoti, 2019). Furthermore, in areas where grid expansion is unfeasible, alternative solutions like solar mini-grids and standalone systems are deployed. These projects not only furnish access to clean and dependable

electricity but also diminish reliance on conventional energy sources like kerosene and wood, thereby bolstering environmental sustainability (Nanjero & Wairiuko, 2020). Moreover, rural electrification efforts in Kenya catalyze economic advancement by fostering entrepreneurship and job opportunities (Njeru & Kirui, 2022). Access to electricity enables the operation of small and medium-sized enterprises (SMEs), facilitating enhanced productivity and market expansion. Additionally, electrification supports agricultural pursuits by facilitating access to irrigation systems, refrigeration for perishable goods, and processing machinery. According to Musyimi and Ondara (2022) the enhanced electricity access in rural areas attracts investment, stimulates industrial growth, and augments overall economic well-being. Through collaborative endeavors involving governmental agencies, development partners, and local communities, rural electrification projects in Kenya are revolutionizing livelihoods, nurturing inclusive development, and establishing a robust foundation for sustainability.

Ideally, rural electrification projects aim to deliver electricity to rural communities, fostering economic development and contributing to overall national economic growth and poverty reduction (Nyakoi, 2016). These projects are entirely funded by the national government and are thus expected to adhere to designated project timelines. However, according to the Auditor General's report of 2021/2022, over 40% of these projects faced delays, stalls, or were behind schedule (GOK, 2022). During the review period, approximately 47% of rural electrification projects in the Central Rift Region, were not completed as planned despite the allocation of required project resources, resulting in a 53% completion rate compared to the national average of 78%. Additionally, some projects are encountering audit queries, public dissatisfaction, and complaints from potential beneficiaries. Despite the Rural Electrification Authority (REA) providing clear management and implementation guidelines for all projects, numerous delays suggest a gap in monitoring and evaluation during the implementation phase. Studies have presented varying findings on the impact of certain M&E practices on project performance across different contexts and variables (Maina & Karanja, 2021; Koima & Mukulu, 2020). These studies have explored diverse M&E practices including planning, stakeholder participation, capacity building, resource allocation, risk management, and tools, among others. However, they have not specifically examined these M&E planning in the context of rural electrification projects. Given the significance of rural electrification projects in rural development, it was imperative to examine the influence of monitoring and evaluation planning performance of rural electrification projects in Central Rift Region, Kenya

II. Objective of the Study

The objective of the study was to determine the influence of monitoring and evaluation planning on performance of rural electrification projects in Central Rift Region, Kenya.

III. Literature Review

Monitoring and evaluation planning entails a framework for tracking and assessing the project's progress and effectiveness (Groth, 2020). M&E planning is typically essential in tracking outputs and designing evaluation activities to assess project efficiency. This is critical for guaranteeing continual project improvement and success. The key aspects of planning comprise the design, scheduling and budgeting. In project design, a detailed plan that describes the project's goals, activities, and expected outcomes is developed, which is necessary in defining the scope and identifying target stakeholders, and interventions to be actualized (Kheswa, 2020). A logical framework of change with M&E design articulates the cause and effect pathways through which project inputs could lead to desired outputs. Therefore, through meticulous project design, the project could be strategically aligned with the overall goals under the resource constraints. A clearly defined schedule inform the sequence of activities in a project process. In particular, detailed project schedules ensure that activities are performed in a systematic and timely manner. This minimizes the delays and optimizes resource utilization. Mwirerwa and Mulyungi (2020) opines that planning is linked to effectiveness of coordination and communication among project stakeholders. Ultimately, a proper schedule facilitate collaboration and synergy among the project team members. Moreover, M&E scheduling guide project managers in track progress, predicting potential bottlenecks, and making necessary adjustments to keep the project on track. Project budgeting promotes efficiency in use of resources required to carry out the project (Leduchowicz-Municio, Juanpera, Domenech, Ferrer-Martí, Udaeta, & Gimenes, 2024). This enhance strategic allocations to the various project activities and components. This includes determining costs related to personnel, equipment, materials, training and overhead, as well as calculating contingencies and unexpected costs. Hence, this process aims to ensure that resources are allocated efficiently and effectively to maximize project impact while minimizing waste and inefficiency. As such, budgeting allows for robust analysis and reporting mechanisms, which are essential for fact-based decision-making throughout the project process.

Planning plays a crucial role in monitoring and evaluation for rural electrification initiatives, as it establishes the framework for systematically tracking and assessing project progress, ensuring that objectives are achieved effectively and efficiently (Kheswa, 2020). A well-crafted M&E plan outlines key performance indicators, sets achievable timelines, and allocates resources wisely, which helps in identifying potential issues early and allows for timely corrective actions. This is especially significant in rural electrification, where projects often encounter unique logistical, environmental, and social challenges that could affect their success (Qudrat-Ullah, 2023). Additionally, comprehensive planning promotes stakeholder engagement by clearly outlining roles and responsibilities, ensuring alignment with the project’s goals and methodologies. It also enhances transparency and accountability by incorporating mechanisms for regular reporting and feedback, which are vital for maintaining trust and commitment among all involved (Palit & Kumar, 2022). Critical planning theory was developed by Forester (1980). The critical planning theory posits that the processes of planning and implementation within various projects ought to transcend traditional methodologies that often privilege the interests of dominant stakeholders while marginalizing overlooking the less powerful stakeholders. It emphasizes the need for a critical examination of the power dynamics at play, requiring the managers to consider who benefits from specific outcomes and who bears the burdens of decision-making (Zarghami, 2024).

Critical planning theory underscores the importance of incorporating inclusive and participatory approaches into the planning of monitoring and evaluation processes in rural electrification projects (Zarghami, 2024). By involving local communities, especially those from less recognized groups, in the planning stages, managers can ensure that their perspectives inform the criteria for assessing project outcomes. This collaborative engagement helps to highlight qualitative factors, such as improvements in quality of life and access to vital services, while also uncovering power dynamics and equity issues that might be overlooked in traditional frameworks (Irfan et al., 2021). Furthermore, the theory promotes reflexivity, urging planners and evaluators to critically examine their assumptions and biases throughout the process, which enhances accountability and fosters a culture of continuous learning. Ultimately, integrating critical planning theory into the planning of monitoring and evaluation ensures that rural electrification projects are not only technically sound (Zarghami, 2024). It also fosters social equity, truly reflecting the needs and aspirations of the communities they aim to serve. The relationship between monitoring and evaluation planning and performance of rural electrification projects is illustrated in figure 1:

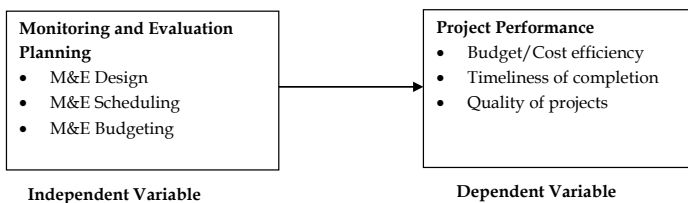


Figure 1: Conceptual Framework

The empirical review systematically examined and analyzed relevant empirical studies and synthesizing the findings to gain insights into the existing state of knowledge, and identify gaps. Nyakoi (2016) conducted a study on the influence of monitoring and evaluation strategies on the implementation of rural electrification projects in Tharaka Nithi County. Employing a descriptive research design, the study involved 120 participants from the Rural Electrification Authority (REA) staff and beneficiaries across three selected constituencies. Findings revealed that 46% of respondents perceived the strength of the M&E team as having a significant impact on REA project implementation. Additionally, 35% of participants acknowledged the influence of management support on project implementation, with an additional 24% attributing a very significant influence to it. Moreover, participants highlighted that a clearly defined scope of work aids in planning and guides the M&E team. Lastly, a majority of respondents stressed the significance of frequent stakeholder meetings in influencing the implementation of REA projects.

Tesfalem (2019) conducted a study on monitoring and evaluation factors affecting success of a telecom expansion program. The research employed a mixed-methods approach, incorporating both quantitative and qualitative methodologies, and employed descriptive and explanatory research designs. Primary and secondary data sources were utilized for data collection. Analysis of the collected data involved descriptive analysis, correlation, and regression analysis using SPSS version 24. Results from the study revealed that factors such as planning, the strength of the M&E team, and stakeholder participation were significant contributors to the effectiveness of monitoring and evaluation in the telecom expansion program. Overall, the research demonstrated a positive correlation between changes in monitoring and evaluation factors and project success, with a confidence level of 95%. These findings underscored the

crucial role of monitoring and evaluation systems in enhancing the performance of the telecom expansion program, suggesting that robust monitoring and evaluation processes are linked with increased levels of project success.

Musyimi and Ondara (2022) conducted an assessment of the collaborative monitoring and evaluation practices and outcomes of projects funded by the county in Uasin-Gishu County, Kenya. The study adopted a descriptive research approach and focused on a sample of 41 county officials drawn from various departments, including stakeholders. Results revealed that the level of proficiency in project monitoring and evaluation (M&E) among county staff was moderate. Furthermore, the study highlighted the high cost implications associated with project M&E, along with significant stakeholder involvement in M&E activities within the county. The study observed that the technical expertise in utilizing collaborative M&E practices had a moderate impact on project performance, while the influence of policy frameworks on project outcomes was similarly rated as moderate. Additionally, inadequate allocation of funds for implementing collaborative M&E practices and the percentage of the M&E budget in relation to development expenditure in each project were identified as factors significantly affecting project performance. Similarly, the study noted the considerable influence of policy frameworks on project performance within the county. Research gaps were identified and the current sought to fill them. Nyakoi (2016) investigated the influence of management support, clear delineation of project scope, and frequency of stakeholder meetings on the implementation of Rural Electrification Agency (REA) projects. However, the study seemed to overlook essential aspects of Monitoring and Evaluation (M&E) planning, particularly the development of evaluation methodologies and the scheduling of monitoring activities. Tesfalem's (2019) research similarly emphasized the importance of planning, team robustness, and stakeholder involvement in project performance. In contrast, the current study specifically focused on M&E planning, particularly in terms of project design and scheduling.

IV. Research Methodology

A descriptive research design was employed in this study. The target population for this study was the 116 ongoing rural electrification projects in Central Rift Region. The projects were the unit of analysis while the project managers were the unit of observation. The choice of project managers was justified for obtaining data on M&E planning in rural electrification projects due to their firsthand experience and insights into all the project activities. Given the limited size of the target population, sampling was omitted in favor of employing the census technique, which involves collecting data from every individual or unit within the entire population of interest. Consequently, all 116 project managers were involved in the study. The data was collected using a structured questionnaire. The descriptive and inferential methods were utilized in analysis, which was aided by Statistical Packages for Social Sciences (SPSS). Descriptive data analysis center on condensing and illustrating data to grasp its traits and trends, incorporating measures like central tendency and dispersion. Through this method, data was analyzed through percentages, means and standard deviations. Inferential data analysis techniques establish relationships between predictors and the response variable. They included Pearson's Moment correlation coefficient and the linear regression analysis methods. Findings were presented through tables. In regression analysis, the following model was applied:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where;

Y = Project Performance

β_1 = Beta Coefficient

X_1 = M&E Planning

ε = Error of Margin

V. Results

The population consisted of 116 ongoing rural electrification projects. Consequently, 116 questionnaires were prepared and distributed. A total of 84 responses were fully completed, yielding a response rate of 72.4%. Dubey and Kothari (2022) asserted that a response rate of 70% or higher is adequate for research studies. Consequently, the 72.4% response rate was considered sufficient for this study.

5.1 Descriptive Statistical Results

The study sought to establish the effect of M&E planning on performance of rural electrification projects. The findings are shown in Tables 1 and 2:

Table 1: Effect of M&E Planning on Performance of Rural electrification Projects

	N	SA	A	N	D	SD	Mean	Std. Dev
Our monitoring and evaluation plans are well aligned with project objectives.	84	35.7%	48.8%	14.3%	1.2%	0%	4.19	0.719
Flexibility in project design allows for adaptation to evolving project needs.	84	31%	50%	10.7%	6%	2.4%	4.01	0.938
Regular monitoring and review of M&E budgets help identify potential cost overruns.	84	15.5%	32.1%	33.3%	10.7%	8.3%	3.36	1.126
We regularly review the monitoring and evaluation plans.	84	41.7%	35.7%	17.9%	3.6%	1.2%	4.13	0.915
A clear and realistic project schedule is essential for ensuring timely completion of monitoring and evaluation activities.	84	20.2%	34.5%	33.3%	6%	6%	3.57	1.067
Effective monitoring of project milestones and deadlines enhances accountability.	84	21.4%	52.4%	17.9%	4.8%	3.6%	3.83	0.942

The results in Table 4.2 indicate that 35.7% of the respondents strongly agreed, while 48.8% agreed, bringing the total to 84.5% of respondents who expressed agreement (Mean=4.19; Std. Dev.=0.719) that monitoring and evaluation plans are well aligned with project objectives. This alignment allows for accurate tracking of progress and timely adjustments, thereby improving project efficiency. It enhances project performance by ensuring effective resource utilization and consistent achievement of goals within the established scope of the rural electrification projects. 81% of the project managers at least agreed (Mean=4.01; Std. Dev.=0.938) that flexibility in project design allows for adaptation to evolving project needs. A flexible project design enables rural electrification projects to adjust to changing needs and conditions, ensuring modifications can be implemented smoothly without hindering progress. This adaptability enhances project performance by increasing responsiveness to unexpected challenges and improving the chances of achieving project goals efficiently.

Albeit 32.1% of the respondents agreed, majority (33.3%) of were indifferent (Mean=; Std. Dev.=1.126) that regular monitoring and review of M&E budgets help identify potential cost overruns. Frequent monitoring and evaluation of M&E budgets help identify potential cost overruns by comparing actual expenditures with planned allocations. This proactive strategy allows for timely adjustments, ensuring costs are controlled and the project remains within budget. 77.4% of the project managers concurred (Mean=4.13; Std. Dev.=0.915) that they regularly review the monitoring and evaluation plans. Regularly reviewing monitoring and evaluation plans boosts project performance by ensuring that progress remains aligned with objectives and that adjustments are made as needed. This continual assessment enhances efficiency, accountability, and the overall likelihood of successfully achieving project goals. 54.7% of the respondents agreed that a clear and realistic project schedule is essential for ensuring timely completion of monitoring and evaluation activities. Moreover, 73.8% also agreed that effective monitoring of project milestones and deadlines enhances accountability. Effective monitoring of project milestones and deadlines enhances accountability by tracking progress and addressing deviations quickly. Overall, the research found that planning monitoring and evaluation has a strong effect on the performance of rural electrification projects. The findings align with Nyakoi’s (2016) research on monitoring and evaluation strategies for rural electrification projects in Tharaka Nithi County, which highlighted the significant impact of the M&E team's strength and management support on project implementation.

Table 2: Project Performance

	N	SA	A	N	D	SD	Mean	Std. Dev
Deadlines for project milestones are clearly communicated to all team members.	84	41.7%	41.7%	8.3%	2.4%	0%	4.29	0.721
We regularly review and evaluate to ensure alignment with budgetary constraints.	84	45.2%	34.5%	16.7%	1.2%	2.4%	4.19	0.925
Quality is considered a priority throughout all phases of our	84	41.7%	35.7%	19%	2.4%	1.2%	4.14	0.894

project lifecycle.								
Timely completion of project milestones planning and coordination effectiveness.	84	40.5%	51.2%	8.3%	0%	0%	4.32	0.624
Project quality is monitored and evaluated regularly to identify areas for improvement.	84	36.9%	50%	9.5%	1.2%	2.4%	4.18	0.838
We track and analyze our expenses regularly to identify areas for cost reduction and optimization.	84	34.5%	40.5%	19%	2.4%	3.6%	4.00	0.982

The research findings established that 83.4% of the respondents agreed (Mean=4.29; Std. Dev.=0.721) that deadlines for project milestones are clearly communicated to all team members. Clearly communicating deadlines for project milestones to all team members ensures that everyone is aware of their responsibilities and timelines. This clarity improves project performance by aligning efforts and maintaining focus, which helps meet deadlines and achieve project goals efficiently. 77.4% of the project managers agreed (Mean=4.14; Std. Dev.=0.894) that quality is considered a priority throughout all phases of our project lifecycle. Making quality a priority throughout every phase of the project lifecycle ensures that high standards are upheld consistently. This commitment to quality improves project performance by minimizing errors, enhancing reliability, and achieving superior results. Moreover, 91.7% of the respondents concurred (Mean=4.32; Std. Dev.=0.624) that timely completion of project milestones planning and coordination effectiveness. Timely completion of project milestones, combined with effective planning and coordination, ensures that the project stays on track and adheres to its schedule. This approach enhances project performance by facilitating smooth progress and meeting deadlines efficiently. 75% of the respondents agreed (Mean=4.00; Std. Dev.=0.982) that they track and analyze expenses regularly to identify areas for cost reduction and optimization. Regular tracking and analysis of expenses help identify opportunities for cost reduction and optimization. This practice enhances project performance by allowing for timely adjustments to control costs and improve overall efficiency. The descriptive findings established that monitoring and evaluation planning significantly affect the project performance of rural electrification projects.

5.2 Inferential Statistical Results

Inferential analysis was undertaken to determine the relationship between monitoring and evaluation planning and the project performance of rural electrification projects. These included correlation and regression analysis.

5.2.1 Pearson’s Correlation Analysis

Pearson’s correlation analysis was done to establish the relationship between M&E planning and the performance of rural electrification projects. Results are presented in Table 3:

Table 3: Correlation between Monitoring and Evaluation Planning and Performance of Rural Electrification Projects

		ProjectPerformance
Monitoring and Evaluation Planning	Pearson Correlation	.704**
	Sig. (2-tailed)	.000
	N	84

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

The findings revealed a strong, positive, and significant relationship between the monitoring and evaluation planning and the performance of rural electrification projects, with a correlation coefficient of $r=0.704^{**}$ and a p-value of 0.000. This indicates that an improved effectiveness in monitoring and evaluation planning activities leads to enhanced project performance. Consequently, the key elements of M&E planning such as planning design, scheduling, and budgeting for monitoring and evaluation activities significantly affect the performance of rural electrification projects.

5.2.2 Regression Analysis

Regression analysis was done to predict the performance of rural electrification projects from the variation in M&E planning. Findings are presented in Tables 4, 5 and 6:

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.704 ^a	.495	.489	.29957

a. Predictors: (Constant), Monitoring and Evaluation Planning

According to the regression model summary, the correlation coefficient was $R=0.704$, and the coefficient of determination was $R^2=0.495$. This indicates that monitoring and evaluation planning explained 84.3% of the variance in the performance of rural electrification projects. Therefore, M&E planning significantly influenced the performance of these projects.

Table 5: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.219	1	7.219	80.447	.000 ^b
Residual	7.359	82	.090		
Total	14.578	83			

a. Dependent Variable: ProjectPerformance

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

The Analysis of Variance (ANOVA) results showed a significant F-value of 80.447 with a p-value of 0.000 at the 95% confidence level. This indicates that the overall model was significant, and the monitoring and evaluation planning had a significant effect on the performance of rural electrification projects.

Table 6: Regression Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.983	.248		8.003	.000
Monitoring and Evaluation Planning	.572	.064	.704	8.969	.000

a. Dependent Variable: ProjectPerformance

The multiple regression model was represented as $Y = 1.983 + 0.572X_1$. The results indicated that the beta coefficient for M&E planning was 0.572, meaning a one-unit change in M&E planning resulted in a 0.572 unit change in project performance. The findings showed that project performance was predicted from the variation in M&E planning. The t-value=8.969 was significant ($p=0.000$) at 95% confidence level. As such, M&E planning affected the performance of rural electrification projects.

VI. Conclusion

The study concluded that monitoring and evaluation practices, particularly M&E planning significantly affect the performance of rural electrification projects. The alignment of M&E plans with project objectives ensures accurate tracking of progress, timely adjustments, and effective resource utilization, all of which enhance project efficiency and outcomes. It was established that flexibility in M&E design allows projects to adapt to evolving needs, while careful scheduling and budgeting enable cost control and accountability. Overall, these M&E planning play a crucial role in driving the performance of rural electrification projects by ensuring that goals are met efficiently and within the defined scope.

VII. Recommendation

The recommendations have been made based on the conclusions of the study. Firstly, the study recommends the project managers should closely align the M&E plans with project objectives to facilitate accurate tracking and timely adjustments. They should incorporate flexibility into project designs to adapt to changing needs and conditions effectively. Regularly reviewing and updating M&E plans will help maintain alignment with goals and improve overall project performance.

References

- [1] Chege, N. C., & Kinoti, F. K. (2019). Risks on the rural electrification project implementation performance in Mukurwe-ini Sub-county, Nyeri County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(5), 52-72.
- [2] Del-Río-Carazo, L., Acquila-Natale, E., Iglesias-Pradas, S., & Hernández-García, Á. (2022). Sustainable Rural Electrification Project Management: An Analysis of Three Case Studies. *Energies*, 15(3), 1203.
- [3] GoK (2021). *Auditor General Report on State Corporations 2021/2022*. Nairobi: Government Printers
- [4] Groth, A. (2020). Overcoming one-way impact evaluation of rural electrification projects. *International Journal of Energy Economics and Policy*.

- [5] Irfan, M., Khan, S. Z., Hassan, N., Hassan, M., Habib, M., Khan, S., & Khan, H. H. (2021). Role of project planning and project manager competencies on public sector project success. *Sustainability*, 13(3), 14-21.
- [6] Juanpera, M., Domenech, B., Ferrer-Martí, L., Garzón, A., & Pastor, R. (2021). Renewable based electrification for remote locations. Does short-term success endure over time? A case study in Peru. *Renewable and Sustainable Energy Reviews*, 146, 111-177.
- [7] Kheswa, P. (2020). *Residential electrification design topology evaluation model-the sustainable approach for residential developments* (Doctoral dissertation, North West University (South Africa)).
- [8] Koima, J. J., & Mukulu, E. (2020). Influence of Monitoring and Evaluation on Project Performance in Kenya Agricultural and Livestock Research Organization. *The Strategic Journal of Business & Change Management*, 7(3), 1195 – 1215.
- [9] Leduchowicz-Municio, A., Juanpera, M., Domenech, B., Ferrer-Martí, L., Udaeta, M. E. M., & Gimenes, A. L. V. (2024). Field-driven multi-criteria sustainability assessment of last-mile rural electrification in Brazil. *Renewable and Sustainable Energy Reviews*, 192, 114211.
- [10] Maina, M. S., & Karanja, K. (2021). Factors Affecting Monitoring and Evaluation Processes of National-Government Constituency Development Fund Projects: A Case of Nakuru County, Kenya. *International Journal of Recent Research in Social Sciences and Humanities*, 8(4), 57-64.
- [11] Mohite, R., Kanthe, R., Kale, K. S., Bhavsar, D. N., Murthy, D. N., & Murthy, R. D. (2024). Integrating Artificial Intelligence into Project Management for Efficient Resource Allocation. *International Journal of Intelligent Systems and Applications in Engineering*, 12(4s), 420-431.
- [12] Musili, Y. N., & Nyang'au, S. (2022). Project team management practices and performance of rural electrification projects in North Eastern, Kenya. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 6(2).
- [13] Musyimi, C. M., & Ondara, A. (2022). Collaborative monitoring and evaluation practices and performance of county funded projects in Uasin Gishu County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3 (7), 102-119.
- [14] Mwirerwa, E., & Mulyungi, P. (2020). Analysis of Factors Affecting Performance of Rural Electrification Projects in Rwanda: A Case of Scaling Up Energy Access Project (SEAP).
- [15] Nanjero, S. K., & Wairiuko, J. W. (2020). Influence of project planning on performance of rural electrification project in Mumias West Constituency, Kenya. *International Journal of Project Management*, 2(3), 62-74.
- [16] Njeru, C. M., & Kirui, C. (2022). Monitoring and Evaluation Practices and Performance of Kenya National Highway Authority Road Construction Projects in Nairobi City County, Kenya. *Journal of Entrepreneurship & Project Management*, 2(1), 11-27.
- [17] Nyakoi, N.E. (2016). *Influence of Monitoring and Evaluation Strategy on the Implementation of Rural Electrification Authority Projects in Tharaka Nithi County Kenya* (Doctoral dissertation, University Of Nairobi).
- [18] Onjure, C. O., & Wanyoike, D. M. (2016). Influence of Monitoring and Evaluation Practices on Performance of National Government Funded Construction Projects in Uasin Gishu County-Kenya. *International journal of innovative research and development*, 5(12).
- [19] Palit, D., & Kumar, A. (2022). Drivers and barriers to rural electrification in India-A multi stakeholder analysis. *Renewable and Sustainable Energy Reviews*, 166, 112-663.
- [20] Qudrat-Ullah, H. (2023). Improving Rural Electrification Access in Cameroon: A Qualitative Study. In *Exploring the Dynamics of Renewable Energy and Sustainable Development in Africa: A Cross-Country and Interdisciplinary Approach* (pp. 7-36). Cham: Springer Nature Switzerland.
- [21] Tesfalem, S. (2019). Impact of Monitoring and Evaluation Factors on Project Success: In case of Telecom Expansion Program (TEP), Ethiotelcom (Doctoral dissertation, St. Mary's University).