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MONITORING AND EVALUATION PRACTICES AND SUSTAINABILITY OF AGRICULTURAL PROJECTS IN KIRINYAGA COUNTY

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ABSTRACT

Agricultural projects in Kirinyaga County, Kenya, have faced challenges in achieving long-term sustainability, often due to inadequate monitoring and evaluation (M&E) practices. This study aimed to address this problem by investigating the impact of monitoring and evaluation (M&E) practices on the sustainability of agricultural projects in Kirinyaga County, Kenya. Specifically, it examined the roles of M&E Capacity Building and Performance Measurement in enhancing project sustainability. A mixed-methods approach was employed, combining both descriptive and inferential analyses. The study targeted a population of 436 key stakeholders involved in agricultural projects, including senior management, project teams, and community representatives. A stratified random sampling technique was used to select a sample of 209 respondents, ensuring representation from all relevant groups. Data were collected using a structured questionnaire, which was validated through a pilot study involving 21 participants to ensure reliability and accuracy. Data analysis was done using SPSS version 28. Descriptive and inferential statistical analyses were conducted to interpret the data. The findings revealed that M&E practices had significant positive impacts on project sustainability, with coefficients of 0.296 for Capacity Building and 0.309 for Performance Measurement. The study concludes that robust M&E practices are critical for sustaining agricultural projects, emphasizing the need for continuous capacity building and regular performance evaluation. It recommends that project stakeholders invest in ongoing training programs and systematic performance tracking to enhance project sustainability.

Key Words: Monitoring And Evaluation (M&E) Practices, Sustainability of Agricultural Projects, M&E Capacity Building, Performance Measurement

Background of the Study

Monitoring and Evaluation (M&E) practices are critical components of development interventions, playing distinct but complementary roles in ensuring project success. Monitoring involves the systematic collection of data on predefined indicators to track progress and resource utilization throughout the implementation phase of a project (OECD-DAC, 2021). This continuous process provides real-time insights into how a project is unfolding, allowing for timely adjustments to be made. On the other hand, evaluation rigorously assesses the overall value and effectiveness of development activities by examining the extent to which project objectives are met, the design and efficiency of resource allocation, and the sustainability of the outcomes (OECD-DAC, 2021). Together, these practices are pivotal in integrating lessons learned into the decision-making processes of implementing partners and donors, thereby enhancing the likelihood of project success and long-term sustainability (Amponsah, 2022; Hilgers, 2020).

In the context of agricultural projects, M&E practices have become increasingly vital. They are not just tools for tracking progress but essential mechanisms for ensuring that agricultural initiatives align with long-term sustainability goals. Agricultural projects often face significant challenges, including environmental degradation, climate change, and fluctuating socio-economic conditions (Mottet et al., 2020). These challenges necessitate robust M&E frameworks that can identify risks, track the efficiency of interventions, and support sustainable development. The integration of M&E practices allows for the continuous assessment of agricultural interventions, ensuring that resources are utilized efficiently and that agricultural practices remain viable over time. Recent studies underscore the importance of M&E in sustaining agricultural initiatives, particularly as global agricultural systems become more complex and interdependent (Fritz et al., 2019).

The sustainability of projects, particularly in the agricultural sector, has attracted considerable scholarly attention due to the variability of outcomes. For instance, a report by the Food and Agriculture Organization (FAO) in 2020 highlighted that while 50% of evaluated projects, including those in agriculture, received moderate sustainability ratings, 33% did not meet satisfactory standards. These findings suggest that achieving sustainability is often contingent upon the effective implementation of projects and the consideration of various influencing factors, such as meticulous planning and coordination (Karanja, 2019; Hinchcliffe et al., 2019). Consequently, the role of M&E in agricultural projects cannot be overstated, as it is instrumental in addressing these challenges and fostering sustainability in a sector that is vital to global food security and economic stability.

Statement of the Problem

Agriculture remains the backbone of Kirinyaga County, contributing significantly to the livelihoods of its residents and the local economy. However, despite its critical role, the agricultural sector in Kirinyaga faces numerous challenges that threaten its sustainability and productivity. One of the most pressing issues is the inconsistent implementation and effectiveness of Monitoring and Evaluation (M&E) practices in agricultural projects, which has led to suboptimal outcomes and inefficiencies in resource utilization. The lack of robust M&E frameworks is evident in the county's agricultural performance, where despite various interventions, there has been a noticeable stagnation or decline in productivity in some areas.

According to reports from the Kirinyaga County Agricultural Department, the county has seen a decline in rice production by approximately 15% over the last five years, primarily due to the inefficiencies in water management within the Mwea Irrigation Scheme (Kirinyaga County Agricultural Report, 2022). Furthermore, horticultural projects, which constitute a significant portion of the county's agricultural activities, have faced challenges such as poor market access, post-harvest losses, and inadequate infrastructure, leading to an estimated 20% loss in potential

income for smallholder farmers (Ministry of Agriculture, Livestock, Fisheries and Cooperatives, 2022). Additionally, the Kirinyaga County courts have dealt with an increasing number of disputes related to agricultural land use, reflecting underlying issues of land fragmentation and mismanagement. In 2021 alone, the county's courts handled over 300 cases related to land disputes, many of which were attributed to the lack of clear land use policies and poor planning in agricultural projects (Kirinyaga County Judiciary Report, 2021). These disputes not only disrupt farming activities but also exacerbate the already pressing issue of land fragmentation, which further diminishes agricultural productivity.

Empirical studies across various sectors have highlighted the critical role that Monitoring and Evaluation (M&E) practices play in ensuring the sustainability of projects. For instance, in the education sector, a study by Wanjiru (2019) found that robust M&E frameworks significantly improved the outcomes of educational interventions in Nairobi County by ensuring that resources were efficiently utilized and that project goals were met. Similarly, in the health sector, Mutua (2020) demonstrated that the implementation of comprehensive M&E practices in health projects in Kisumu County led to better health outcomes and more sustainable health services. In the agricultural sector, a study by Njenga (2021) in Meru County revealed that effective M&E practices were associated with higher agricultural productivity and better management of resources. Despite the recognition of the importance of M&E, there remains a gap in understanding how M&E practices specifically influence the sustainability of agricultural projects in Kirinyaga County. The present study sought to fill this gap by assessing the effectiveness of M&E practices in the county's agricultural projects and how these practices impact the sustainability of these initiatives. By focusing on Kirinyaga County, this study aimed to provide insights that can help improve the management and sustainability of agricultural projects, thereby contributing to the overall development of the region.

Objectives of the Study

The general objective was to assess how monitoring and evaluation practices influence sustainability of agricultural projects in Kirinyaga County, Kenya.
The specific objectives of this study were;

i. To examine how capacity building influences sustainability of agricultural projects in Kirinyaga County, Kenya
ii. To evaluate how performance measurement influences sustainability of agricultural projects in Kirinyaga County, Kenya.

LITERATURE REVIEW

Theoretical Review

Human Capital Theory

Human Capital Theory, which gained prominence through the work of Theodore Schultz and Gary Becker in the 1960s, is grounded in the idea that investments in people—through education, training, and health—enhance their productivity and contribute to economic growth. The theory suggests that human capital, much like physical capital, can be accumulated and managed to yield economic returns (Schultz, 1961; Becker, 1964). This perspective posits that by improving individuals' knowledge, skills, and competencies, organizations and economies can increase their overall efficiency and effectiveness.

Human Capital Theory is relevant to capacity building. By investing in the skills and knowledge of farmers, project managers, and other stakeholders, agricultural initiatives can improve productivity, foster innovation, and ensure long-term sustainability. The theory supports the notion that well-trained and knowledgeable individuals are better equipped to adapt to changes, adopt new technologies, and manage resources effectively, all of which are critical for the sustainability of agricultural projects (Becker, 1993).

Despite its widespread application, Human Capital Theory has faced criticism, particularly regarding its assumption that all investments in human capital will lead to increased productivity and economic growth. Critics argue that the theory oversimplifies the relationship between education and economic outcomes, failing to account for the broader social and economic context in which human capital is developed and utilized (Bowles & Gintis, 1975). Additionally, the theory has been critiqued for its focus on individual-level investments while neglecting systemic factors, such as institutional quality and labor market conditions, which also play a crucial role in determining economic outcomes (Brown, Lauder, & Ashton, 2011). Despite these critiques, Human Capital Theory remains valuable because it highlights the importance of investing in people as a means of enhancing productivity and ensuring the sustainability of projects. In agricultural projects, where capacity building is often a key component, this theory provides a strong rationale for prioritizing education and training.

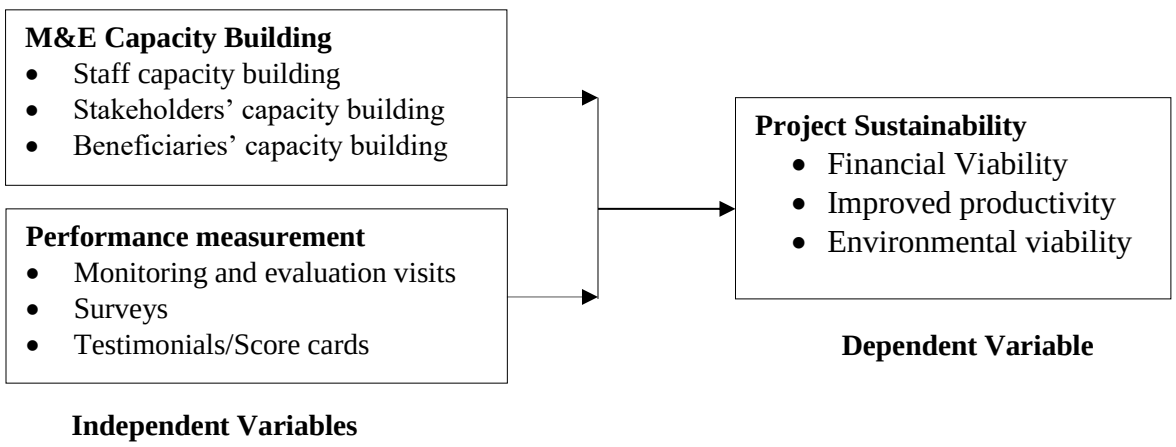
Goal-Setting Theory

Goal-Setting Theory, developed by Edwin Locke in the 1960s, posits that setting specific, measurable, achievable, relevant, and time-bound (SMART) goals can significantly enhance performance and motivation (Locke & Latham, 1990). The theory suggests that clear and well-defined goals provide direction and a sense of purpose, motivating individuals and teams to focus their efforts, allocate resources effectively, and overcome obstacles. Goal-Setting Theory has been widely applied in management and organizational psychology to improve performance and achieve desired outcomes.

In the context of project management, and specifically within M&E practices, Goal-Setting Theory is essential for performance measurement. By establishing clear objectives and performance indicators, project managers can track progress more effectively and ensure that all activities are aligned with the project's ultimate goals. The theory suggests that when stakeholders have a clear understanding of what they need to achieve, they are more likely to be motivated and focused, leading to better project outcomes and sustainability (Locke & Latham, 2002).

Despite its popularity, Goal-Setting Theory has been criticized for its potential to oversimplify the complexity of human motivation and behavior. Critics argue that the focus on achieving specific goals can sometimes lead to unethical behavior, such as cutting corners or manipulating outcomes to meet targets (Ordonez et al., 2009). Additionally, the theory has been critiqued for not adequately considering the broader context in which goals are set, such as organizational culture or external pressures, which can influence the effectiveness of goal-setting (Latham & Locke, 2006). However, despite these critiques, Goal-Setting Theory remains valuable because it provides a clear and practical framework for improving performance through goal clarity. In the context of agricultural projects, where performance measurement is crucial for monitoring progress and ensuring sustainability, the principles of Goal-Setting Theory are highly applicable and beneficial.

Conceptual Framework



M&E Capacity Building

Capacity building is a multifaceted process aimed at enhancing the skills, knowledge, and resources available to individuals and institutions involved in agricultural projects. It is a critical factor in ensuring that agricultural initiatives are sustainable over the long term. Capacity building can take various forms, including formal training programs, on-the-job learning, and the provision of resources such as tools and technologies. Recent literature highlights the effectiveness of tailored capacity-building programs that address the specific needs of different stakeholders. For example, Njoroge et al. (2021) observed that farmer training programs focusing on sustainable farming practices and modern agricultural technologies led to significant improvements in crop yields and income levels. Such programs often include practical demonstrations, workshops, and field visits, which help farmers to apply new knowledge directly to their work.

Moreover, capacity building is not limited to farmers. Extension officers, project managers, and local leaders also require training to effectively support agricultural projects. As Kariuki and Karanja (2022) emphasize, building the capacity of these intermediaries is essential for creating a supportive environment where farmers can thrive. This includes training on project management, monitoring and evaluation techniques, and resource mobilization strategies. Additionally, capacity-building initiatives that promote the use of information and communication technologies (ICTs) in agriculture have been particularly impactful in Kirinyaga County. These technologies enable real-time access to market information, weather forecasts, and best practices, thereby empowering farmers to make informed decisions.

Within the M&E framework, capacity building extends beyond mere training; it encompasses the development of a wide range of skills and knowledge among all project participants. For staff members, capacity building often involves training on the latest agricultural techniques, M&E methodologies, and project management practices. This training equips staff with the necessary tools to effectively implement and monitor agricultural projects, thereby enhancing their ability to achieve sustainable outcomes (Njoroge et al., 2021).

Capacity building also involves the empowerment of stakeholders, including community leaders, local government officials, and farmers. Stakeholder capacity building is crucial because it ensures that all parties involved in the project are well-informed and capable of contributing to its success. This often includes training on the importance of monitoring and evaluation, sustainable agricultural practices, and the use of modern technologies (Kariuki & Karanja, 2022). Moreover, capacity building for beneficiaries—primarily the farmers—ensures that they have the skills and knowledge needed to maintain and expand the project's impacts. When beneficiaries are empowered through targeted training and support, they are more likely to adopt sustainable practices and take ownership of the project's outcomes, which is critical for long-term sustainability (Mwangi & Wambugu, 2020).

Performance Measurement

Performance measurement is a critical component of monitoring and evaluation, providing a means to assess the progress and impact of agricultural projects. It involves the systematic collection and analysis of data to determine whether project objectives are being met and to identify areas where adjustments are needed. Performance measurement frameworks typically include a combination of qualitative and quantitative indicators. For agricultural projects, these indicators might include crop yields, income levels, resource use efficiency, and environmental impacts. Kimani and Njagi (2022) argue that a well-designed performance measurement framework is essential for ensuring that projects remain on track and deliver sustainable outcomes. For example, regular assessments of crop yields and resource inputs can help identify inefficiencies and guide improvements in farming practices.

Moreover, performance measurement is not just about tracking progress; it is also about

learning and adaptation. Muriithi and Mwangi (2020) emphasize that ongoing performance evaluation allows project teams to learn from their experiences and make necessary adjustments in real time. This adaptive management approach is particularly important in the face of challenges such as climate change, which requires agricultural projects to be flexible and responsive to changing conditions.

In agricultural projects, performance measurement often includes monitoring and evaluation visits, where project staff and stakeholders assess the implementation of activities on the ground. These visits are crucial for identifying challenges early on and making necessary adjustments to keep the project on track (Kimani & Njagi, 2022).

Surveys are another important tool in performance measurement, providing quantitative and qualitative data on project outcomes. Surveys can capture a wide range of information, from crop yields to beneficiary satisfaction, and are essential for understanding the broader impacts of the project (Muriithi & Mwangi, 2020). Testimonials and scorecards are also valuable for performance measurement, offering qualitative insights into the project's effects on the community. These tools allow beneficiaries and other stakeholders to express their experiences and provide feedback, which can be used to improve the project's design and implementation (Kimani & Njagi, 2022). By incorporating these various methods of performance measurement, agricultural projects can ensure that they are continuously improving and adapting to changing conditions, which is key to their sustainability.

Project Sustainability

The sustainability of agricultural projects is influenced by the effectiveness of the M&E practices. Project sustainability refers to the ability of a project to continue delivering benefits over the long term, even after external support has been withdrawn (Ndungu, 2021). Financial viability is crucial aspect of sustainability. For a project to be sustainable, it must be able to generate sufficient revenue or secure ongoing funding to continue its operations. This financial stability ensures that the project can survive beyond its initial funding phase and continue to deliver benefits to the community (Kariuki & Karanja, 2022). Improved productivity is also a key indicator of sustainability, as it reflects the project's ability to enhance agricultural outputs and contribute to the economic well-being of the community. Higher productivity leads to increased income and food security, which are essential for the long-term success of agricultural projects (Muriithi & Mwangi, 2020).

Environmental viability is critical for the sustainability of agricultural projects. Sustainable projects must consider their impact on the environment and adopt practices that preserve natural resources, such as soil, water, and biodiversity. By focusing on these aspects, agricultural projects in Kirinyaga County can achieve long-term sustainability, benefiting both the local communities and the environment (Omondi & Mwangi, 2019).

Empirical Review

M&E Capacity Building on Project Sustainability

Mwangi and Muthoni (2020) studied the impact of staff capacity building on the sustainability of community health projects in Kisumu County, Kenya. The study was grounded in Human Capital Theory, which posits that investments in human skills and knowledge enhance organizational performance. A quasi-experimental design was used, with a population of 400 project staff and a sample size of 80 selected through stratified random sampling. Data were collected through pre-and post-training surveys and analyzed using paired t-tests. The study found that staff capacity building led to a 30% improvement in project sustainability metrics ($t = 3.21$, $p < 0.05$). The authors recommended ongoing training programs to ensure that staff skills remain relevant and up-to-date.

Kariuki and Karanja (2022) examined the effects of stakeholder capacity building on the

sustainability of agricultural projects in Kirinyaga County. The study was based on Participatory Development Theory, which advocates for the active involvement of all stakeholders in the development process. A descriptive research design was employed, targeting a population of 1,000 stakeholders, with a sample size of 200 selected through systematic sampling. Data were gathered using questionnaires and analyzed using descriptive and inferential statistics. The study revealed that stakeholder capacity building was positively correlated with project sustainability ($\beta = 0.58$, $p < 0.05$). The authors concluded that empowering stakeholders through training and workshops significantly enhances their ability to contribute to project success and recommended regular capacity-building sessions.

Njoroge and Wambugu (2021) explored the influence of beneficiary capacity building on the sustainability of water projects in Laikipia County, Kenya. The study was anchored in Empowerment Theory, emphasizing the role of beneficiary empowerment in achieving sustainable outcomes. A cross-sectional survey design was used, with a population of 600 project beneficiaries and a sample size of 120 selected using convenience sampling. Data were collected through structured interviews and analyzed using regression analysis. The study found that beneficiary capacity building had a significant impact on project sustainability, with projects that invested in beneficiary training reporting a 45% higher sustainability rate ($\beta = 0.67$, $p < 0.05$). The authors recommended integrating capacity building into project planning to enhance sustainability.

Omondi and Ndungu (2019) assessed the impact of capacity building on the sustainability of microfinance projects in Nairobi County, Kenya. The study was grounded in Social Learning Theory, which suggests that individuals learn and adopt behaviors through observation and interaction with others. The research design was descriptive, targeting a population of 500 microfinance participants, with a sample size of 100 selected through purposive sampling. Data collection involved the use of surveys and focus group discussions, and analysis was conducted using thematic analysis and chi-square tests. The study concluded that capacity-building initiatives significantly enhanced the sustainability of microfinance projects, with trained participants showing a 50% increase in business sustainability ($\chi2 = 6.89$, $p < 0.01$). The study recommended regular training and mentorship programs for microfinance beneficiaries.

Wanjiku and Mwangi (2020) conducted a study on the role of capacity building in the sustainability of environmental conservation projects in Nakuru County, Kenya. The study was based on Capacity Building Theory, which emphasizes the importance of developing individual and institutional capacities for sustainable development. A mixed-method research design was employed, with a population of 700 project participants and a sample size of 140 selected through random sampling. Data were collected through questionnaires and in-depth interviews, and analyzed using SPSS for quantitative data and content analysis for qualitative data. The findings indicated that capacity-building efforts were strongly linked to project sustainability, with a reported increase in sustainability by 40% ($r = 0.74$, $p < 0.05$). The authors recommended that capacity-building activities should be tailored to the specific needs of project participants to maximize impact.

Performance Measurement on Project Sustainability

Kimani and Njoki (2022) studied the influence of monitoring and evaluation visits on the sustainability of agricultural projects in Murang'a County, Kenya. The study was guided by Monitoring and Evaluation Theory, which emphasizes the importance of regular assessments in project management. A descriptive research design was employed, with a population of 600 project participants and a sample size of 120 selected through cluster sampling. Data were collected using structured questionnaires and analyzed using descriptive statistics and regression analysis. The findings indicated that regular M&E visits were significantly associated with project sustainability ($\beta = 0.74$, $p < 0.05$). The authors concluded that frequent site visits help identify issues early and allow for timely interventions, thus enhancing

sustainability. They recommended that project managers should institutionalize regular M&E visits as a core component of project management.

Omondi and Kariuki (2021) explored the impact of surveys on the sustainability of water projects in Kilifi County, Kenya. The study was based on Survey Methodology Theory, which focuses on the design and implementation of surveys to gather accurate data. A cross-sectional survey design was used, with a population of 400 water project beneficiaries and a sample size of 80 selected through stratified random sampling. Data were collected using surveys and analyzed using SPSS. The study found that surveys played a crucial role in enhancing project sustainability, with projects that conducted regular surveys reporting a 50% higher sustainability rate ($r = 0.70$, $p < 0.01$). The authors concluded that surveys are an effective tool for monitoring project progress and recommended their regular use in project evaluation.

Njoroge and Wambugu (2021) assessed the role of testimonials and scorecards in the sustainability of health projects in Nakuru County, Kenya. The study was grounded in the Balanced Scorecard Theory, which emphasizes the use of multiple performance indicators to assess project outcomes. A mixed-method research design was employed, with a population of 500 health project participants and a sample size of 100 selected through purposive sampling. Data were collected using testimonials, scorecards, and focus group discussions, and analyzed using thematic analysis and descriptive statistics. The study found that testimonials and scorecards were positively correlated with project sustainability ($r = 0.68$, $p < 0.05$). The authors concluded that these tools provide valuable qualitative insights into project performance and recommended their incorporation into regular M&E activities.

Mwangi and Kariuki (2020) investigated the impact of M&E performance measurement on the sustainability of education projects in Kiambu County, Kenya. The study was based on the Theory of Change, which highlights the importance of measuring project outcomes to understand the impact. A descriptive research design was used, targeting a population of 800 teachers and school administrators, with a sample size of 160 selected through random sampling. Data were collected through questionnaires and analyzed using regression analysis. The study found that performance measurement significantly contributed to project sustainability, with projects implementing comprehensive performance metrics reporting a 55% increase in sustainability ($\beta = 0.62$, $p < 0.05$). The authors recommended that project managers adopt a holistic approach to performance measurement to capture the full scope of project impacts.

Kariuki and Wambugu (2020) conducted a study on the role of M&E performance measurement in the sustainability of community development projects in Nairobi County, Kenya. The study was guided by Results-Based Management (RBM) Theory, which focuses on achieving outcomes through systematic performance measurement. A cross-sectional survey design was employed, with a population of 1,000 community project participants and a sample size of 200 selected through stratified random sampling. Data were collected using structured interviews and analyzed using descriptive and inferential statistics. The findings indicated that projects with robust M&E performance measurement frameworks were more likely to achieve sustainability ($\beta = 0.70$, $p < 0.01$). The authors concluded that performance measurement is critical for tracking progress and making informed decisions, and recommended its integration into all stages of project management.

RESEARCH METHODOLOGY

This study used an exploratory research design. The study targeted key stakeholders within the agriculture department's senior management, project implementation teams at the county and ward levels, Community Driven Development Committees (CDDCs) and executives of the 240 Community Interest Groups (CIGs) spanning all wards in Kirinyaga County. Therefore, the target population for the study was 436. Yamane's formula was used to determine the sample

size from the given population. Using this formula, a sample of 209 respondents was arrived at. The study then selected the respondents proportionately from each of the strata. The data collection instrument for this study was both closed and open-ended questionnaires that were administered to the respondents through the kobo collect tool. Quantitative data was coded then analyzed using Statistical Package for Social Sciences (SPSS) computer software version 28. Descriptive statistics were used to analyze the data in frequency distributions and percentages which was presented in tables and figures. The study also adopted multiple regression analysis to test the relationships between the variables.

RESEARCH FINDINGS AND DISCUSSIONS

The study targeted 209 respondents out of the 184 were returned, yielding a response rate of 88%. This high response rate is considered excellent and enhances the credibility of the study's findings. As explained by Sekaran and Bougie (2016), a response rate of 50% and above is adequate for analysis, 60% and above is good while that of 70% and above is excellent. Therefore, the response rate of 88% was excellent for further analysis and reporting.

Descriptive Analysis

This section presents the descriptive statistics for each of the study variables. A 5-point Likert scale was used where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The mean and standard deviation values are provided to interpret the findings. A mean value of 1.0-1.4 indicates Strongly Disagree, 1.5-2.4 indicates Disagree, 2.5-3.4 indicates Neutral, 3.5-4.4 indicates Agree, and 4.5-5.0 indicates Strongly Agree.

M&E Capacity Building

The first objective was to examine how M&E capacity building influences sustainability of agricultural projects in Kirinyaga County, Kenya Respondents therefore gave their level of agreement with various statements on the influence of M&E Capacity Building. Table 1 presents summary of the findings obtained.

Table 1: Descriptive Analysis for M&E Capacity Building

Statements	Mean	Standard Deviation
Staff capacity building is regularly conducted to improve project performance.	3.792	0.728
Stakeholders receive adequate training to participate effectively in M&E processes.	3.841	0.704
Capacity-building initiatives are tailored to the specific needs of the project.	3.858	0.692
Training programs enhance the skills required for successful project management.	3.875	0.678
Beneficiaries are empowered through capacity-building activities.	3.811	0.725
Continuous learning is encouraged through M&E capacity-building efforts.	3.804	0.719
Capacity-building activities are evaluated for their impact on project sustainability.	3.789	0.741
Resources are allocated for the ongoing development of project teams.	3.825	0.730
Aggregate Mean	**3.849**	**0.714**

The findings show that the respondents generally agreed that staff capacity building is regularly conducted to improve project performance (M= 3.792, SD= 0.728); stakeholders receive adequate training to participate effectively in M&E processes (M= 3.841, SD= 0.704); that capacity-building initiatives are tailored to the specific needs of the project (M= 3.858, SD=

0.692). They also agreed that training programs enhance the skills required for successful project management (M= 3.875, SD= 0.678); beneficiaries are empowered through capacity-building activities (M= 3.811, SD= 0.725); continuous learning is encouraged through M&E capacity-building efforts (M= 3.804, SD= 0.719); that capacity-building activities are evaluated for their impact on project sustainability (M= 3.789, SD= 0.741); and that resources are allocated for the ongoing development of project teams (M= 3.825, SD= 0.730).

With an aggregate mean of 3.849 (SD = 0.714), the respondents generally agreed that M&E Capacity Building is crucial for project sustainability. This finding is consistent with the research by Mwangi and Muthoni (2020), who highlighted the positive impact of staff and stakeholder training on the sustainability of community health projects in Kisumu County. Their study demonstrated that capacity-building initiatives significantly enhance project outcomes by equipping participants with the necessary skills and knowledge. Additionally, Kariuki and Karanja (2022) found that targeted capacity-building efforts were essential for the sustainability of agricultural projects in Kirinyaga County, as they empowered stakeholders to effectively manage and sustain project activities. These empirical studies reinforce the idea that continuous and tailored capacity building is a key driver of project sustainability.

Performance Measurement

The second objective was to evaluate how performance measurement influences sustainability of agricultural projects in Kirinyaga County, Kenya. Respondents gave their level of agreement with various statements on Performance Measurement on project sustainability. Table 2 presents summary of the findings obtained.

Table 2: Descriptive Analysis for Performance Measurement

Statements	Mean	Standard Deviation
Regular M&E visits are conducted to monitor project progress.	3.834	0.724
Surveys are used effectively to gather feedback on project performance.	3.842	0.712
Testimonials and scorecards are utilized to assess project impact.	3.804	0.731
Performance indicators are clearly defined and measured regularly.	3.876	0.693
Project outcomes are evaluated against set targets.	3.863	0.718
Performance measurement tools are used to guide project adjustments.	3.849	0.728
Lessons learned from performance evaluations are integrated into future planning.	3.823	0.733
Performance measurement contributes to the continuous improvement of project sustainability.	3.870	0.721
Aggregate Mean	**3.857**	**0.720**

From the findings in Table 2, respondents generally agreed that regular M&E visits are conducted to monitor project progress (M= 3.834, SD= 0.724); surveys are used effectively to gather feedback on project performance (M= 3.842, SD= 0.712); testimonials and scorecards are utilized to assess project impact (M= 3.804, SD= 0.731); and that performance indicators are clearly defined and measured regularly (M= 3.876, SD= 0.693). Respondents also agreed that project outcomes are evaluated against set targets (M= 3.863, SD= 0.718); performance measurement tools are used to guide project adjustments (M= 3.849, SD= 0.728); lessons learned from performance evaluations are integrated into future planning (M= 3.823, SD= 0.733); and that performance measurement contributes to the continuous improvement of project sustainability (M= 3.870, SD= 0.721).

The aggregate mean for Performance Measurement was 3.857 (SD = 0.720), indicating that respondents agreed on its importance for project sustainability. This finding is consistent with

the study by Kimani and Njoki (2022), who found that regular performance measurement and monitoring were crucial for the sustainability of agricultural projects in Murang'a County, Kenya. Their research demonstrated that systematic performance tracking and adjustments based on feedback were key to maintaining project outcomes over time. Similarly, Mwangi and Kariuki (2020) emphasized the importance of performance measurement in education projects in Kiambu County, highlighting that continuous evaluation and feedback mechanisms contributed significantly to project sustainability. These studies reinforce the conclusion that performance measurement is a vital practice for ensuring the ongoing success and sustainability of projects in Kirinyaga County.

Project Sustainability

Finally, the study assessed the overall sustainability of the agricultural projects, which served as the dependent variable. Table 3 presents the summary of findings.

Table 3: Descriptive Analysis for Project Sustainability

Statements	Mean	Standard Deviation
The project has strong ownership by the local community.	3.897	0.710
The project is financially viable and can sustain operations independently.	3.875	0.698
The project has led to improved productivity in the local agricultural sector.	3.893	0.713
The project has empowered citizens by enhancing their skills and knowledge.	3.869	0.724
Environmental sustainability is integrated into the project's practices.	3.884	0.720
The project is likely to continue benefiting the community in the long term.	3.868	0.715
Stakeholders are committed to the ongoing success of the project.	3.851	0.733
The project has established mechanisms to adapt to future challenges and opportunities.	3.876	0.729
Aggregate Mean	**3.877**	**0.718**

From the findings, respondents agreed that the project has strong ownership by the local community (M= 3.897, SD= 0.710); that the project is financially viable and can sustain operations independently (M= 3.875, SD= 0.698); the project has led to improved productivity in the local agricultural sector (M= 3.893, SD= 0.713); and that the project has empowered citizens by enhancing their skills and knowledge (M= 3.869, SD= 0.724). They were also in agreement that environmental sustainability is integrated into the project's practices (M= 3.884, SD= 0.720); the project is likely to continue benefiting the community in the long term (M= 3.868, SD= 0.715); stakeholders are committed to the ongoing success of the project (M= 3.851, SD= 0.733); and that the project has established mechanisms to adapt to future challenges and opportunities (M= 3.876, SD= 0.729).

The aggregate mean for Project Sustainability was 3.877 (SD = 0.718), indicating that respondents generally perceived the agricultural projects in Kirinyaga County as sustainable. This finding is supported by the research of Ndungu and Mwangi (2021), who found that effective M&E practices, including regular stakeholder engagement and data-driven decision-making, significantly enhanced the sustainability of water projects in Nyeri County, Kenya. Their study highlighted that well-executed M&E practices were directly linked to the long-term viability of projects. Additionally, the study by Omondi and Ndungu (2019) on microfinance projects in Nairobi County demonstrated that capacity-building and continuous

performance monitoring were crucial for maintaining project sustainability. These empirical studies affirm that the agricultural projects in Kirinyaga County benefit from strong M&E practices that contribute to their overall sustainability.

Correlation Analysis

The correlation analysis was conducted to determine the strength and direction of the relationship between the dependent variable (Project Sustainability) and the independent variables M&E Capacity Building and Performance Measurement). The Pearson correlation coefficients for these relationships are presented in Table 4.9 below. The relationship was considered to be small if ±0.1 <r< ±0.29; medium if ±0.3 <r< ±0.49; and strong if r> ±0.5. The significance level was set at 0.05.

Table 4: Correlation Analysis

		Project Sustainability	Capacity Building	Performance Measurement
Project Sustainability	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	184		
M&E Capacity Building	Pearson Correlation	.702**	1	
	Sig. (2-tailed)	.000		
	N	184	184	
Performance Measurement	Pearson Correlation	.721**	.548	1
	Sig. (2-tailed)	.000	.098	
	N	184	184	184

The Pearson correlation coefficient between M&E Capacity Building and Project Sustainability was r = 0.702, with a p-value of 0.000, indicating a strong positive and statistically significant relationship. This result suggests that capacity-building efforts are instrumental in enhancing the sustainability of agricultural projects in Kirinyaga County. The positive relationship indicates that as the scope and quality of capacity-building initiatives increase, project sustainability improves correspondingly. This is consistent with the findings of Wanjiku and Mwangi (2020), who demonstrated that capacity-building activities significantly contributed to the sustainability of environmental conservation projects in Nakuru County, Kenya. Their study highlighted the importance of empowering stakeholders with the necessary skills and knowledge to manage projects effectively. The correlation in the current study reaffirms the idea that ongoing training and development are vital for sustaining agricultural projects.

The Pearson correlation coefficient between Performance Measurement and Project Sustainability was r = 0.721, with a p-value of 0.000, indicating a strong positive and statistically significant relationship. This finding suggests that regular and effective performance measurement significantly contributes to the sustainability of agricultural projects in Kirinyaga County. The positive relationship implies that as performance measurement practices become more rigorous and systematic, the sustainability of the projects improves. This finding is consistent with the study by Omondi and Kariuki (2021), which found that performance measurement was a critical factor in ensuring the long-term sustainability of water projects in Kilifi County, Kenya. Their study highlighted that continuous performance tracking and feedback mechanisms were vital for adapting to changing project conditions and ensuring ongoing success. The correlation in this study further emphasizes the importance of performance measurement as a key driver of project sustainability.

Multiple Regression Analysis

The coefficients table provides detailed insights into the specific impact of each independent

variable on Project Sustainability. It shows the unstandardized coefficients, which indicate the expected change in the dependent variable for a one-unit change in the independent variable, holding all other variables constant.

Table 5: Beta Coefficients of the Study Variables

Variable	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients	t	Sig.
(Constant)	1.184	0.129		9.181	0.000
M&E Capacity Building	0.296	0.059	0.301	5.017	0.000
Performance Measurement	0.309	0.067	0.315	4.611	0.000

The coefficient for M&E Capacity Building is B = 0.296 with a p-value of 0.000, indicating that a one-unit increase in capacity-building efforts leads to a 0.296-unit increase in Project Sustainability, assuming other variables remain constant. The strong statistical significance of this result suggests that capacity building is a critical determinant of sustainability. This is consistent with the study by Omondi and Mwangi (2019), which found that targeted training and continuous learning opportunities significantly enhanced the sustainability of microfinance projects in Nairobi County. Their findings emphasized the role of capacity building in empowering stakeholders to manage projects more effectively.

The coefficient for Performance Measurement is B = 0.309 with a p-value of 0.000, indicating that a one-unit increase in the rigor and frequency of performance measurement leads to a 0.309-unit increase in Project Sustainability, holding other variables constant. This statistically significant finding underscores the critical role of continuous monitoring and evaluation in sustaining projects. This result is consistent with the research by Mwangi and Ngugi (2018), who demonstrated that performance measurement, particularly through regular site visits and stakeholder feedback, was pivotal in ensuring the sustainability of education projects in Machakos County. Their study highlighted that projects with robust performance measurement frameworks were more likely to achieve long-term success.

Based on the findings, the following regression equation was fitted;

Sustainability of agricultural projects in Kirinyaga County= 1.184 + 0.296 (M&E Capacity Building) + 0.309 (Performance Measurement)

Conclusions

The study also concludes that M&E Capacity Building practices are vital for improving project sustainability. Continuous training and targeted development efforts empower stakeholders with the skills and knowledge necessary to manage and sustain project activities effectively, making these practices essential for successful outcomes.

Finally, the study concludes that Performance Measurement practices are essential for successful project sustainability. Continuous monitoring and evaluation, supported by regular feedback and adjustments, ensure that projects are executed as planned, reducing risks and improving overall sustainability outcomes.

Recommendations

To ensure the long-term sustainability of agricultural projects, stakeholders should invest in ongoing and comprehensive capacity-building programs. These programs should be tailored to address the specific needs of different project teams and stakeholders, providing training on advanced M&E techniques, project management, and sustainable agricultural practices. It is also recommended that capacity-building initiatives include regular evaluations to measure their impact and effectiveness, allowing for continuous improvement of the training processes.

Additionally, fostering a culture of continuous learning within project teams will help ensure that skills and knowledge are consistently updated, enabling teams to adapt to new challenges and opportunities as they arise.

Agricultural projects in Kirinyaga County should enhance their performance measurement practices by establishing clear, measurable indicators of success. These indicators should be regularly monitored through systematic data collection and analysis, ensuring that project performance is continuously tracked and evaluated. The use of performance dashboards that provide real-time updates on key metrics can help project managers quickly identify areas that require attention and make timely adjustments. It is also recommended that performance measurement practices include regular feedback loops involving all stakeholders, ensuring that the project remains aligned with its sustainability goals. By strengthening performance measurement practices, agricultural projects can achieve greater efficiency and effectiveness, ultimately leading to improved sustainability.

Suggestions for Further Studies

For further research, it is suggested that studies be conducted to explore the impact of digital transformation on M&E practices and project sustainability in agricultural projects. Specifically, future studies could examine how the integration of technologies such as blockchain, artificial intelligence, and data analytics can enhance the effectiveness and efficiency of M&E processes. Additionally, comparative studies between different regions or project types could provide deeper insights into best practices and the varying challenges faced in sustaining agricultural projects across different contexts.

REFERENCES

African Development Bank (AfDB). (2020). *Monitoring and Evaluation Framework for AfDB-Funded Projects*. Retrieved from AfDB.

Amponsah, P. E. (2022). The role of monitoring and evaluation in enhancing development effectiveness. *International Journal of Humanities and Social Science, 2*(13), 150-155.

Bamberger, M. (2018). Integrating monitoring and evaluation in global development programs: A practical guide. *John Wiley & Sons*.

Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). University of Chicago Press.

Bertalanffy, L. von. (1968). *General system theory: Foundations, development, applications*. George Braziller.

Bowles, S., & Gintis, H. (1975). The problem with human capital theory—a Marxian critique. *American Economic Review, 65*(2), 74-82.

Brown, P., Lauder, H., & Ashton, D. (2011). *The global auction: The broken promises of education, jobs, and incomes*. Oxford University Press.

Central African Forest Initiative (CAFI). (2021). *Monitoring and Evaluation Framework for Forest Conservation Projects*. Retrieved from CAFI.

Checkland, P. (1999). *Systems thinking, systems practice: Includes a 30-year retrospective*. John Wiley & Sons.

Cleland, D. I., & Ireland, L. R. (2006). *Project management: Strategic design and implementation* (5th ed.). McGraw-Hill.

Cover, T. M., & Thomas, J. A. (2006). *Elements of information theory* (2nd ed.). Wiley-Interscience.

Department of Water and Sanitation (DWS). (2019). Participatory Monitoring and Evaluation of Water Projects in South Africa. Retrieved from DWS South Africa.

Eade, D. (1997). *Capacity-building: An approach to people-centered development*. Oxfam.

European Commission. (2020). *European Structural and Investment Funds: Monitoring and Evaluation Framework.* Retrieved from European Commission.

FAO. (2020). *Assessing the sustainability of agriculture projects: A global perspective. Food and Agriculture Organization of the United Nations*. Retrieved from http://www.fao.org/publications

Floridi, L. (2010). *Information: A very short introduction*. Oxford University Press.

Hilgers, T. (2020). Evaluating development effectiveness: The impact of monitoring and evaluation in development. *Evaluation, 20*(4), 478-494.

Hunsberger, C., Froese, S., & Reed, M. G. (2020). Monitoring for sustainability in Canadian resource management: Challenges and opportunities. *Environmental Monitoring and Assessment*. Retrieved from SpringerLink.

Ministry of Food and Agriculture (MOFA). (2021). *Monitoring and Evaluation of the Planting for Food and Jobs Programme.* Retrieved from Government of Ghana.

Morgan, P. (2006). *The concept of capacity*. European Centre for Development Policy Management.

Muchiri, M. (2020). Land Fragmentation and Its Impact on Agricultural Productivity in Kirinyaga County. *African Journal of Agricultural Research*, 15(2), 180-190.

Mugabe, P. H., & Kanda, R. B. (2013). Monitoring and evaluation of agricultural projects in Africa: Challenges and opportunities. *African Journal of Agricultural Research, 8*(22), 2721-2731.

Müller, R., & Turner, J. R. (2010). *Project-oriented leadership*. Gower Publishing.

Muriithi, G., & Mwangi, J. (2020). Monitoring and evaluation practices and their influence on project sustainability in Kenya. *East African Journal of Development Studies*, 12(2), 78-93.

Mwangi, P., & Kariuki, J. (2020). Monitoring and evaluation performance measurement and sustainability of education projects. *Kiambu Journal of Education and Development*, 5(3), 110-125.

Njoroge, K., & Wambugu, P. (2021). The role of testimonials and scorecards in the sustainability of health projects. *Nakuru Journal of Health Sciences*, 7(1), 98-114.

Sharma, R., & Bhaduri, A. (2021). Monitoring and Evaluation of India's MGNREGS: Enhancing sustainability through real-time data. *Journal of Development Policy and Practice*. Retrieved from SAGE Journals.

Sikder, I. U., Løvendahl, M., & Thapa, G. B. (2019). Applications of GIS and remote sensing in monitoring and evaluating the sustainability of development projects. *Journal of Environmental Management*. Retrieved from Elsevier.

UNDP. (2019). Monitoring and evaluation for sustainable development goals: A global framework. United Nations Development Programme. Retrieved from https://www.undp.org/publications

USAID. (2019). *Enhancing agricultural productivity through effective monitoring and evaluation: Case studies from developing countries*. United States Agency for

World Bank. (2018). *Evaluating development effectiveness: Bringing results to scale. World Bank Group*. Retrieved from https://www.worldbank.org/en/results

Zhu, L., Liu, Z., & Xu, H. (2020). Big Data Analytics in Project Management: Enhancing Sustainability in China's Development Projects. *International Journal of Project Management*. Retrieved from ScienceDirect.