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Title: Influence Of Monitoring And Evaluation On Performance Of Agricultural Projects In Rwanda: A Case Of Capacity Building Project In The Horticultural Centre Of Excellence.

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Abstract

The 21st century has brought internal and external forces, which have pressurized institutions to adopt monitoring, and evaluation (M&E) in order to be more responsive to the needs of the beneficiaries and accountable to the stakeholders. Using a case study of Rwanda-Israel Horticultural Centre of Excellence (HoCE) capacity building projects, this study focused on the influence of monitoring and evaluation on the performance of agricultural projects in Rwanda. The specific objectives of the study were to find out the influence of: i) monitoring and evaluation planning, ii) monitoring and evaluation data management, and iii) monitoring and evaluation data dissemination and utilization on the performance of capacity building project. The study focused on the period between 2015 and 2021. The stakeholder and program theory/theory of change form the theoretical foundation of this study while monitoring and evaluation and project performance form the conceptual framework. Empirical literature on the influence of M&E on project performance in the agricultural sector was also reviewed. The researcher used a mixed methods design by incorporating both quantitative and qualitative methods. The population of study was 1507 and the sample size was 338 people who were selected by use of stratified, simple random sampling and census methods. However, only 267 were able to participate in the study. Two instruments (the questionnaire and informant interview guide) were used for data collection. The validity of research instruments was determined by performing a content validity index using subject matter experts while reliability was validated through pilot-testing the questionnaire and interview guide using 2 groups of 5 people. Quantitative data was analyzed through descriptive (frequency and percentage distribution tables) and inferential (multiple linear regression) statistics while qualitative data was analyzed through content and narrative analysis. Findings show that all independent variables under have a positive and statistically significant influence on the performance of HoCE capacity building project. This is confirmed by the regression coefficients of β_1=.397 (M&E planning), β_1=.408 (M&E data management), β_1=.513 (M&E data dissemination and utilization) with probability values below 0.05 which show that 39.7%, 40.8% and 51.3% of the changes in HoCE capacity building project performance outcomes are explained by M&E planning, M&E data management and M&E data dissemination and utilization respectively. Therefore, the research rejects the null hypotheses ($H_0$1, $H_0$2 and $H_0$3) and adopts the alternative hypotheses (H_a1, H_a2, and H_a2) in

explaining the statistical significance of the relationship between monitoring and evaluation and performance of HoCE capacity building project. Project beneficiaries need more training in operating M&E mobile data collection technologies as well as subsidies to procure hi-tech tools and equipment for enhancing the productivity of their horticultural farms. It is hoped that the findings of this research will influence HoCE capacity building project managers to formulate better policies of improving M&E functions in the organization. It is also expected to contribute to the existing literature on monitoring and evaluation, thus enhancing academic knowledge on a wide range of M&E practices and emerging issues which will contribute to project management profession

INTRODUCTION

The dawn of the 21st century has brought internal and external forces which have pressurized institutions to be more responsive to the needs of the beneficiaries and accountable to the stakeholders because stakeholders are no longer only interested in activities and outputs but also results and impact (UNICEF, 2003). Project management personnel are therefore increasingly being required to demonstrate outcomes and impact of project interventions.

In order to demonstrate results, project managers need to track progress and get insight on how the project is progressing in terms of its intended objectives and goal. It is also vital to assess the utilization of inputs, execution of activities, realization of output, outcomes and impact compared to the resources that were invested in the project. As observed by Kusek and Rist (2004), it is important that organizations prioritize monitoring and evaluation (M&E) functions in order to effectively and efficiently track progress and improve their success.

M&E has the potential to help organizations, programs and projects to achieve transparency, accountability and intended results at a time when most organizations are being constrained with limited resources for program and project implementation (Stem, *et al.,* 2003). M&E are important functions because they help to answer questions regarding the functioning and progress of the project or strategy in relation to the resources, inputs and objectives.

Monitoring prioritizes the effective, efficient and timely provision and utilization of resources for project implementation, execution of activities to generate outputs and outcomes. Evaluation emphasizes on the extent to which the intended targets were achieved in comparison to the resources. Both monitoring and evaluation functions presuppose that prior to project implementation the designers and implementers conducted a situation analysis, established the immediate and core causes of the problems to be addressed. They therefore, developed the project interventions to address the particular causes, connecting resources with predetermined results and impacts (Levinson, *et al.*, 1999).

Agriculture is one of the key sectors employing the majority population in Rwanda, and it is the second contributor to the country's gross domestic product after services in in 2019. Despite being one of the key pillars of the economy, there is limited land for agriculture due to high population density and soil exhaustion. This has motivated the government of Rwanda to prioritize high value crops that require small acreage to produce high quantities of food. One of these strategies has been the prioritization of horticultural crops which are on high demand in foreign markets. It is in this regard that the Rwanda Israel Horticulture Centre of Excellence was established in Rwanda.

In 2014, the Government of Rwanda and the State of Israel entered into bilateral cooperation for skills upgrading in the agriculture sector in general and in horticultural sector in particular. Since then, every year more than 150 students from Rwanda receives scholarship to study in Israel modern/smart Agriculture and are exposed to advanced technologies through a hands-on training in Israel. As a result of this cooperation, the Rwanda-Israel Horticulture Center of Excellence based at Murindi was established (Top Africa News, 2021).

From June 2016 to March 2020, the Center of Excellence trained about 1484 beneficiaries, including agriculturists from Government institutions, Non-Governmental Organizations (NGOs), higher learning institutions, private companies, students and farmers. About 30 different varieties of vegetables have also been tested for adaptation to Rwandan conditions while 9 varieties of different types of fruits (avocado, mango and citrus) are being introduced to Rwanda. A total of 17,200 seedlings, rootstocks and seeds have been in the horticulture center nursery for acclimatization and thereafter will be transferred to Rwandan Farmers.

The main goal is to contribute to the improvement of the horticultural production in Rwanda through the exchange of MASHAV's experience and knowledge; to introduce Israeli agriculture and farming technologies in Rwanda; to strengthen the technical skills of Rwandan researchers, extension the circle of agents through transfer of knowledge through capacity building and other skills among others.

Statement of the Problem

According to UNDP (2009) and UNODC (2008) monitoring and evaluation is a critical management function in project management because it helps managers to better design projects in alignment with beneficiary needs. It also helps to track progress during implementation and measure success.

Rwanda aspires to transform its economy and modernize the lives of all Rwandans under vision 2050 (MINECOFIN, 2015). Modernization of agriculture which is one of the key sectors for the country's growth will be among the top priorities for the country. M&E is key function for measuring performance of agricultural outcomes.

However, there is limited monitoring and evaluation capacity among staffs in the ministries, departments and agencies (CLEAR-AA, DFID & University of Witwatersrand, 2013) and this hinders the effectiveness of M&E function in government projects including the Horticultural Centre of Excellence. As a result, project implementation and results at the Horticultural Centre of Excellence are not effectively monitored and evaluated which complicates management efforts to understand whether projects have performed as planned or failed.

The researcher believes that addressing M&E gaps and improving the M&E function in management of outcomes in the agricultural sector can improve project performance. It is on this basis that the current research sought to examine how M&E function in the Horticultural Centre of Excellence influenced the performance of capacity building projects.

Objectives of the Study

The general objective of this study was to assess the influence of monitoring and evaluation on the performance of agricultural projects in Rwanda a case of capacity building project in Horticulture center of Excellence.

The specific Objectives were:

1. To find out the effect of monitoring and evaluation planning on the performance of capacity building project in Horticultural Centre of Excellence
2. To identify the effect of monitoring and evaluation data management on the performance of capacity building project in Horticultural Centre of Excellence
3. To establish the effect of monitoring and evaluation data dissemination and utilization on the performance of capacity building project in Horticultural Centre of Excellence

Research Hypotheses

1. **$H_0$1:** Monitoring and evaluation planning has no statistically significant effect on the performance of capacity building project in Horticultural Centre of Excellence.
2. **$H_0$2:** Monitoring and evaluation data management has no statistically significant effect on the performance of capacity building project in Horticultural Centre of Excellence.
3. **$H_0$3:** Monitoring and evaluation data dissemination and utilization has no statistically significant effect on the performance of capacity building project in Horticultural Centre of Excellence.

LITERATURE REVIEW

Monitoring and Evaluation Planning and Project performance

It has been argued that effective M&E planning in an organization provide regular information for effective internal and external project management. Ramboll (2005) argued that internally, managers use information provided by M&E in reviewing project implementation in order to meet specified targets and achieve predetermined results. Key information on project progress, implementation gaps, resource usage is key for improving project success and it can only be availed with strong and effective monitoring and evaluation system. Similarly, M&E information is important for external stakeholders who expect results and impact of the intervention on

beneficiaries. Availing M&E information therefore improves trust especially of donors towards project managers and implementer. The M&E information improves systems thinking towards clarifying goals and objectives as well as formulating and justifying supplementary budget requests.

The World Bank (2005) demonstrates that planning for results-based monitoring and evaluation prioritizes program attention on achieving results by identifying promising program practices. M&E functions also help to ascertain unplanned yet valuable project, program, and policy results. Equally, M&E practices facilitate project supervisors to establish program gaps and take corrective action. Effective monitoring and evaluation strategies are then applied to eliminate fear within project management, and can help formulate ways of creating an atmosphere of openness through which teams can learn from mistakes, make improvements and create knowledge in the process which will improve organizational learning.

Effective monitoring and evaluation planning functions are also a source of knowledge capital for scalability. They enable organizations to establish knowledge base for project team leaning and future scalability in other projects by disclosing what works, what does not work, why it does not work, what strategies to use, what outcomes are expected from each strategy, etc. In this regard, the M&E system promotes organizational learning, stakeholder access to information and improvement in beneficiary welfare. This argument id corroborated by Stiglitz and Islam (2003) who stresses that access to information is important for successful strategy development in many interventions. It is worth to note that the commitment of policy makers towards poverty eradication should be demonstrated with open access to information for all stakeholders through results-based monitoring and evaluation and disclosure of results for action.

Monitoring and Evaluation Data Management and Project performance

Ramboll (2005) demonstrated that data systems for M&E could help in promoting enhanced transparency and accountability in projectized institutions and agencies. Important ripple effects may be generated as internal and external stakeholders will have a clear understanding of the project and its related policies. The capacity to demonstrate positive outcomes can also attract political and popular support from the community.

Preparatory M&E data management activities such as formative field work studies enhance program or project validation. This is consistent with World Bank (2006c) which indicated that fieldwork visits help to project, legalize and authorize results reported by project planners. They are of specific significance to big projects and generate essential project outcomes. They help to assess progress, results, and the identified gaps that need to be corrected. This helps the management to prepare strategic plans for such weaknesses.

Joint M&E data management systems are increasingly being implemented on cluster programs and projects targeting to achieve outcomes from multiple stakeholder perspectives. The World Bank (2006b) proposes that joint evaluation visits strengthen ownership among different stakeholders and improve results. The World Bank (2006b) indicates that joint M&E field visits support ownership of the results. Joint M&E involve teams of staffs from one or more project partners getting involved in the evaluation process of a program or project. Joint efforts for M&E are usually efficient ways to obtain overall picture of the project progress (IFAD, 2002b). It is important to stress that in planning such visits, it is vital to prioritize on specific issues to be addressed and to ensure that relevant partners and key beneficiaries are involved in the evaluation process.

In a related development, Mark, et al. (2000) stress that effective project management goes beyond execution of activities and realization of outputs but also involves well-linked monitoring and evaluation systems. In this line, the World Bank (2006a) argues that to achieve effective and efficient project management, M&E should be mainstreamed in all project processes and areas to guarantee transparency, accountability and realization of results and impact. The monitoring and evaluation functions answers questions on how well an intervention or strategy is working in relation to the resources invested and the objectives set.

The success of project management function is based upon supporting functions which ensure that critical procedures and activities are effectively and efficiently implemented. The International Fund for Agricultural Development ([IFAD], 2002a) stresses that monitoring and evaluation function helps to identify elements and conditions necessary for project success. It is also argued that the M&E function serves as an early warning system for likely problem which

create an avenue for corrective action. In such cases, M&E provides the foundation for improved decision making.

The implementation of monitoring and evaluation processes is a very important step in project success and sustainability. As noted by the Strengthening Monitoring and Evaluation Systems Project ([SMES], 2009), the results of monitoring and evaluation help managers and institutions to effectively manage activities at the sector, program and project levels as well as promoting future planning and formulation of policies, programs and projects. Similarly, monitoring and evaluation helps institutional management in their policy formulation, development and analysis (SMES Project, 2009). The M&E system also facilitates organizations in evidence-based policy making thus delivering programs on an informed point of view. Furthermore, Coffman (2007) stresses that executing monitoring and evaluation helps organizations in improving transparency and accountability, thus eliminating wastage of donors' money.

Similarly, Organization for Economic Cooperation and Development (2006) stressed that M&E encourages nations to i) assess whether their programs and policies have achieved their intended results or not, ii) examine the allocation of program benefits among different groups of beneficiaries, iii) evaluate the factors that determine the effectiveness of projects in achieving the intended results, iv) record experiences and lessons in the institutions systems for learning and management review, and v) provide evidence for decision-makers on scalability of the policy in the future or in other geographical settings.

M&E can be conducted at various stages of the project to establish the effectiveness and efficiency of the implementation process. A study conducted by the World Bank on M&E of Urban Development Programs (Michael & Eleanor, 2011) in Brazil showed that a survey assessment was able to determine the amount of credit provided in microcredit schemes for artisans was too small. It also revealed that the benefiting participants were scarcely benefiting due to the inadequacy of the loans. The M&E information was consequently used to make a number of project reviews and changes which led to increased micro-financing fund disbursement by donors. Consequently Michael and Eleanor (2011) referred to evaluation as an internal activity intended to give feedback on project progress, challenges, effectiveness and efficiency.

Monitoring and Evaluation Data Dissemination, Utilization and Project performance

It has been observed that monitoring and evaluation provides information for donors and beneficiaries to establish the level of accountability (Cicmil & Hodgson, 2006). A study conducted in 26 African countries (Lavagnon, Diallo & Denis, 2010) demonstrated the relationship between project management efforts, project success and success criteria and found out that projects that had strong M&E systems were effectively demonstrating accountability and transparency to the stakeholders compared to those with weak of without M&E systems. Based on these observations, it is worth to argue that M&E provides information to project stakeholders which enhances transparency and accountability.

Program evaluations have been found to help interventions and their managers to learn about project strength, weaknesses, opportunities and threats, thus establishing a foundation for proposing reviews and new approaches to management and implementation. This makes it possible to positively impact the targeted beneficiaries. The Independent Evaluation Group (IEG) of the World Bank analyzed experiences with institutionalization of M&E in 5 Latin American countries where it was revealed that almost half of 59 implementation completion and result reports (ICRRs) reviewed showed weaknesses at some stage of the project cycle (World Bank, 2006). Seven of the projects reported poor monitoring and evaluation provisions at the design stage while 18 mentioned shortfalls in the execution of M&E systems. Based on the identified weaknesses, the IEG recommended new strategies and corrective actions to make the project successful in delivering intended results.

Nevertheless, an assessment of the 15 ICRRs by the World Bank (2006) revealed that the World Bank guide for ICRR planning require separate evaluation for M&E design execution and use have already generated significant improvements for correcting M&E issues. An assessment of the Agricultural Development project in Anning Valley (China) demonstrated that monitoring and evaluation helped project management to improve their focus on women and the landless people. The monitoring and evaluation system as formulated was M&E system as designed was created and comprehensively used by project implementer to measure progress and establish problems and monitoring actions. The methods applied in project monitoring and evaluation was extensively adopted by other agricultural development programs.

Effective monitoring and evaluation promotes successful project execution even in large scale and dispersed projects. A study by Lai (2001) of the Loess Plateau Watershed Rehabilitation Project demonstrated that important components included in large scale and widely scattered projects were: (i) generating local human and institutional capacity local for implementation, (ii) making use of simple and transparent procurement procedures with high degree of beneficiary control, and (iii) commanding a robust and apparent M&E system, which enhanced efficient and effective controls. It was also observed that well-grounded and better quality independent monitoring and evaluation of project processes combined together with willingness by project management to adjust weaknesses and adopt remedies quickly was instrumental to the success and success of the project.

Monitoring and evaluation systems should be established and prioritized by management during project formulation and initiation and closely supervised during implementation. An assessment of agricultural and forestry extension project in Indonesia (IFAD, 2002a,b) revealed that continuous monitoring and evaluation of project processes and activities with the active participation of stakeholders assisted management to guarantee that limited resources were effectively and efficiently utilized to achieve project intended results.

RESEARCH METHODOLOGY

Research Design

The study used mixed methods research design, which involved triangulation of both qualitative and quantitative approaches.

Target Population

The population of the study was 1,507. These included 23 staffs of the Rwanda-Israel Horticultural Centre of Excellence (HoCE) and 1,484 farmer beneficiaries of the Horticultural Centre of Excellence capacity building projects.

Sample Size

The 1967 Yamane simplified formula (Israel, 2013) was used in calculating the sample size. This formula is stated as $n = \frac{N}{1+N(e)^2}$ where n is the sample size, N is the population size and e is the

level of precision/sampling error (.05 or 5%). However, the sampling formula was only applied to the farmer beneficiaries of the project while all the 23 staffs of the Horticultural Centre of Excellence capacity building projects were included in the study using census because their number was small.

$$n = \frac{N}{1 + N(e)^2} = \frac{1{,}484}{1 + 1{,}484\ (0.05)^2} = \frac{1{,}484}{1 + 1{,}484\ * 0.0025} = \frac{1{,}484}{1 + 3.71} = \frac{1{,}484}{4.71} = 315$$

Therefore, the overall sample size was 338 (315 farmer beneficiaries of HoCE capacity building projects and 23 staffs of the Rwanda-Israel Horticultural Centre of Excellence.

Data Collection

The questionnaire and interview guide were used during primary data collection from the selected project staffs and farmer beneficiaries of the HoCE. The questionnaire was constructed using a 5-point level of agreement Lickert Scale, where: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree and SD=Strongly Disagree. The questionnaire survey was preferred because it collects information from many respondents in a projected time frame. Only close-ended questions were used in the questionnaire because they are considered easy to answer.

The interview guide with open-ended questions was also used to collect qualitative data. This questionnaire was administered 2 key informants who included one HoCE project manager and one representative for HoCE farmer beneficiaries. They were composed of questions which requested respondents to explain influence of M&E planning, M&E data management and M&E data dissemination and utilization on the performance of capacity building in HoCE projects.

Data Analysis

The researcher used quantitative and qualitative methods to present and analyze the data. The two quantitative methods used were descriptive statistics (frequency and percentage distribution tables) and inferential statistics (multiple linear regression analysis) while qualitative method used content analysis.

The regression model for this analysis is indicated below:

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

Where:

$Y =$ Dependent variable (project performance)

$\beta_0 =$ Constant

$\beta_1 \ldots \beta_3 =$ Regression coefficients for predictor variables relating to M&E

$X_1 =$ M&E *planning*

$X_2 =$ M&E *data management*

$X_3 =$ M&E *data dissemination/utilization*

$\varepsilon/u =$ Error term/other unobserved factors

INTERPRETATION FINDINGS AND DATA ANALYSIS

Response Rate

The researcher distributed the questionnaire to 338 respondents who included 23 HoCE Management and staffs and 315 farmer beneficiaries of HoCE. Table 4.1 shows that all 23 HoCE management and staffs (response rate of 100%) were able to provide data. However, out of 315 selected farmer beneficiaries of HoCE, 244 (77.4% response rate) were able to provide data. This represents the total response rate of 79% for the two sample strata.

Table: Response Rate

Sample Category	Sample Size	Actual Respondents	Response Rate
HoCE Management and Staffs	23	23	100%
Farmer Beneficiaries of HoCE	315	244	77.4%
Total	**338**	**267**	**79%**

Source: Primary Data, 2021

Monitoring and Evaluation Planning in HoCE

Table: Response on Effectiveness of M&E Planning in HoCE

Response Item	1	2	3	4	5
5. We do a needs assessment	6 (26.1%)	11 (47.8%)	1 (4.3%)	3 (13.0%)	2 (8.7%)
6. We have M&E structures	12 (52.2%)	5 (21.7%)	2 (8.7%)	1 (4.3%)	3 (13.0%)
7. We have designed M&E Frameworks	2	17	-	3	1

	(8.7%)	(73.9%)	-	(13.0%)	(4.3%)
8. We conduct stakeholder analysis	9	10	1	2	1
	(39.1%)	(43.5%)	(4.3%)	(8.7%)	(4.3%)
9. We formulated project M&E indicators	6	12	1	2	2
	(26.1%)	(52.2%)	(4.3%)	(8.7%)	(8.7%)
10. We have establishing project targets	3	15	1	-	4
	(13.0%)	(65.2%)	(4.3%)	-	(17.4%)
11. We do budgeting for M&E	16	4	-	1	2
	(69.6%)	(17.4%)	-	(4.3%)	(8.7%)

Source: Primary Data, 2021

In Table above, item 5, it is observed that 73.9% agreed that HoCE conducted needs assessment, 21.7% disagreed with the statement while 4.3% remained neutral. This suggests that the M&E planning phase of HoCE projects prioritizes the needs of the beneficiaries before the project is started.

In item 6, it is observed that 73.9% agreed that HoCE projects established M&E structures, 17.3% disagreed with the statement while 8.7% remained neutral. This shows that establishment of the organizational structures for M&E is one of the major functions of M&E planning in HoCE. This suggests that HoCE projects have active functions and human resources for conducting the monitoring and evaluation processes of the projects.

Regarding item 7, it is observed that 82.6% agreed that they designed M&E frameworks, while 17.3% disagreed with the statement. This suggests that M&E planning processes in HoCE put the evaluation tools at the core of the process in order to ease the tracking of indicators during performance measurement.

It is also observed in item 8 that 82.6% agreed that HoCE project teams conducted stakeholder analysis. However, 13%% disagreed with the statement while 4.3 were neutral. The high level of agreement suggests that the planning for M&E is a comprehensive process that prioritizes understanding of stakeholders, their influence, interest, power, expectations, urgency, legitimacy, etc., and the strategies for engagement. This helps improve stakeholder support during M&E and reduces their resistance towards the project.

Furthermore, item 9, shows that 78.3% also greed that planning for M&E in HoCE formulated M&E indicators. Nevertheless 17.4% disagreed with the statement while 4.3% remained neutral. The high agreement highlights the fact that M&E planning is properly planned to ensure that project managers determine the measures for determining the achievement of results which helps to easily assess project performance.

In a related response, item 10 shows that 78.2% also agreed that HoCE M&E function set the project targets during the planning phase. On the other hand, 17.4% disagreed with the statement while 4.3% were neutral. This nature of response shows that planning is focused to enable project planners to determine what results to be achieved, at what time and in what quality thus improving project performance.

Lastly, in item 11, it is observed that 87% agreed that during M&E planning, HoCE project teams also formulated M&E budgets for resource mobilization, while 13% disagreed with the statement. This suggests that resource mobilization for M&E in HoCE is given significant consideration to ensure that there is effective M&E financing.

Monitoring and Evaluation Data Management in HoCE

Table: Response on M&E Data Management in HoCE

Response Item	1	2	3	4	5
12. We invest in M&E human resource devt	7 (30.4%)	12 (52.2%)	1 (4.3%)	1 (4.3%)	2 (8.7%)
13. We design data collection instruments	9 (39.1%)	7 (30.4%)	4 (17.4 %)	1 (4.3%)	2 (8.7%)
14. We collect data from beneficiaries	3 (13.0%)	15 (65.2%)	1 (4.3%)	3 (13.0%)	1 (4.3%)
15. We have an effective data quality system	6 (26.1%)	9 (39.1%)	1 (4.3%)	4 (17.4%)	3 (13.0 %)
16. We conduct data analysis and reporting	7 (30.4%)	14 (60.9%)	1 (4.3%)	- -	1 (4.3%)

Source: Primary Data, 2021

As item 12 in Table above shows, it is observed that 82.6% agreed that HoCE project teams did invest in human resource development. However, 13% disagreed with the statement while 4.3% were neutral. This can be attributed to the fact that HoCE project teams are committed to building the capacity of their data management teams to ensure data quality and effective measurement of performance outcomes.

Furthermore, in item 13, data shows that 69.5% agreed that HoCE project management designed effective M&E data collection instruments. Only 13% disagreed with the statement while 17.4% were neutral. The response suggests that HoCE project management is committed to ensure that data collection is guided by static tools to improve validity and reliability as well as guide data collection process on key indicators.

It is further observed in item 14 that 78.2% of respondents agreed that HoCE project management collected data from beneficiaries while 17.3% disagreed with the statement and 4.3% were neutral. This nature of response demonstrates the importance that HoCE project management accords to stakeholder involvement in project M&E which improves project outcomes.

In item 15, it was observed that 65.2% agreed that HoCE project management had an effective data quality control system. However, 30.4% disagreed with the statement while 4.3% were neutral. The nature of response demonstrates HoCE project management's commitment towards elimination of errors while monitoring and evaluating project outcomes. This makes data suitable for informed decision-making, thus improving project performance.

Lastly, it is also observed in item 16 that 91.3% agreed that HoCE project management conducted data analysis and reporting, 4.3% disagreed with the statement while 4.3% were neutral. This can be attributed to HoCE project management's commitment to ensure that the project M&E function produces reports that are in a format that is insightful and easy to use for informed decision making.

M&E Data Dissemination and Utilization in HoCE

Table: M&E Data Dissemination and Utilization in HoCE

Response Item	1	2	3	4	5
17. Our data is accessible to stakeholders	6 (26.1%)	11 (47.8%)	1 (4.3%)	3 (13.0%)	2 (8.7%)
18. Stakeholders participate in M&E functions	12 (52.2%)	5 (21.7%)	2 (8.7%)	1 (4.3%)	3 (13.0%)
19. There is coaching & learning in our M&E	2 (8.7%)	17 (73.9%)	- -	3 (13.0%)	1 (4.3%)
20. Our stakeholders are empowered	9 (39.1%)	10 (43.5%)	1 (4.3%)	2 (8.7%)	1 (4.3%)
21. We embrace project innovation	6 (26.1%)	12 (52.2%)	1 (4.3%)	2 (8.7%)	2 (8.7%)
22. There is transparency and accountability	3 (13.0%)	15 (65.2%)	1 (4.3%)	- -	4 (17.4%)

Source: Primary Data, 2021

As Table above shows, it is observed in item 17 that 73.9% agreed that HoCE project management M&E data/information was accessible to stakeholders. However, 21.7% disagreed with the statement while 4.3% remained neutral. This indicates that HoCE project management prioritizes stakeholder utilization of M&E information for effective decision making.

Furthermore, item 18 demonstrates that 73.9% agreed that there was stakeholder participation in M&E functions. However, 17.3% disagreed with the statement while 8.7% were neutral. This can be attributed to the fact that HoCE project management is interested in having stakeholder inputs to the evaluation process which improves the quality and reliability of M&E reports as well as realigning project implementation to address the needs of beneficiaries, thus improving performance.

In item 19, it is shown that 82.6% of respondents agreed that there was team coaching and learning in the M&E function. However, 17.3% disagreed with the statement. The nature of response on this item suggests that HoCE project management is interested in ensuring that stakeholders learn lessons from the project implementation and M&E processes which can form a body of knowledge for improving future phases of the projects and their performance.

It is also indicated by item 20 that 82.6% of the respondents agreed that HoCE stakeholders were empowered with more knowledge of the project through data dissemination and utilization

process. However, 13% disagreed with the statement while 4.3% were neutral. This nature of response suggests that data dissemination and utilization equips with the required capacity for sustaining project results.

Further observation on item 21 shows that 78.3% agreed that HoCE project team members embraced project innovation to improve outcomes. Only 17.4% disagreed with the statement while 4.3% were neutral. This suggests that the data utilization process allows stakeholders to review project progress and suggest new ways of improving future project phases, thus improving outcomes and performance.

Lastly, it is also observed in item 22 that 78.2% agreed that there was transparency and accountability in M&E function during data dissemination and utilization. Only 17.4% disagreed while 4.3% were neutral. This suggests that DDU process in HoCE project is designed to improve reporting mechanism and responsibility to disclose results on the part of project management, thus enabling improved performance.

Descriptive Project performance

Table: Response on Performance of HoCE Projects

Response Item	1	2	3	4	5
23. The project is completed on time	128 (47.9%)	91 (34.1%)	16 (6.0%)	11 4.1%)	21 (7.9%)
24. Project is executed based on the scope	165 (61.8%)	76 (28.5%)	11 (4.1%)	8 (3.0%)	7 (2.6%)
25. Project quality is satisfactory	118 (44.2%)	107 (40.1%)	19 (7.1%)	13 (4.9%)	10 (3.7%)
26. Project is implemented according to cost	121 (45.3%)	112 (41.9%)	14 (5.2%)	11 (4.1%)	9 (3.4%)

Source: Primary Data, 2021

It is observed in Table above, item 23 that 82% agreed that project completion timing was effective, 12% disagreed with the statement while 6% were neutral. This shows that HoCE project teams were delivering project outcome in accordance with the scheduled time thus positively affecting overall project performance.

In regard to project scope, item 24 shows that 90.3% also agreed that projects were executed based on the scope which means that the coverage of all project components was achieved. Only 5.6% disagreed with the statement while 4.1% were neutral. This shows that HoCE project management have an effective management plan that guides the implementation team in defining, validating, and controlling project outcomes and adhering to the stated standards.

Furthermore, item 25 shows that 84.3% agreed that project quality was satisfactory, 8.6% disagreed saying it was dissatisfactory while 7.1% were neutral. The high level of satisfaction with quality outcomes demonstrates that to a largest extent, HoCE projects were performing well.

Lastly, item 26 shows that in terms of resource usage, 87.3% agreed that HoCE projects were being implemented according to cost, 7.5% disagreed with the statement and 5.2% were neutral. This suggests that HoCE projects' teams were efficient in resource utilization and accountable to the stakeholders, a factor that explains why the projects were generally considered successful.

Inferential Statistical Analysis

Table: Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.418[a]	.836	.835	.612

a. Dependent Variable: project performance

b. Predictor: (Constant), monitoring and evaluation

R (.418) in Table above shows the correlation coefficient indicating the strength of the relationship between monitoring and evaluation and project performance in HoCE. R square (.836) is the coefficient of determination, indicating how much of the total change in project performance can be explained by monitoring and evaluation. Adjusted R square (.835) is a value generated from R square after making adjustments based on other factors.

From the model summary in Table above, it is demonstrated that there is a significant positive relationship between monitoring and evaluation and project performance in HoCE. It can further be observed that 83.5% of the total change in the performance of HoCE capacity building

projects can be attributed to the monitoring and evaluation function. This implies that improvement in monitoring and evaluation practices contributes up to 83.5% of the total change in performance of HoCE capacity building projects, which is significantly large.

Analysis of Variance

Table: Analysis of Variance (ANOVA[a])

	Sum of Squares	df	Mean Square	F	Sig.
Regression	13552.222	3	4517.407	23.319	.000[b]
Residual	50946.964	263	193.715		
Total	**64499.186**	**266**			

a. Dependent Variable: project performance

b. Predictors: (Constant), monitoring and evaluation

Observations from the analysis of variance in Table above indicate that the regression model is statistically significant (f=23.319; p=000<.05) at 5% level of significance. Therefore, since the p-value is less than .05, it is worth to conclude that the regression model used predicts the outcomes significantly well.

Regression Coefficients and Hypothesis Testing

Table: Regression Coefficients and Hypothesis Testing

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	3.312	.319		3.011	.001
M&E Planning (X_1)	.397 (β_1)	.078	.458	5.089	.000
M&E Data Management (X_2)	.408 (β_2)	.041	.315	9.951	.002
Dissemination & Utilization (X_3)	.513 (β_3)	.065	.287	7.892	.000

a. Dependent Variable: project performance

The multiple linear regression's test of significance results shows that all the predictor variables of monitoring and evaluation planning (X_1), monitoring and evaluation data management (X_2) and monitoring and evaluation data dissemination and utilization (X_3) had a significant and

positive influence on the performance of the capacity building projects in Rwanda-Israel HoCE projects.

The regression analysis Table above shows that monitoring and evaluation planning (X_1) had a positive and statistically significant influence on the performance of the capacity building projects in Rwanda-Israel HoCE projects as shown by the coefficient β_1=.397, with p=.000<0.05 at a 5% level of significance. This study rejects the null hypothesis ($H_0$1) which stated that: monitoring and evaluation planning has no statistically significant influence on the performance of capacity building project in HoCE. We therefore adopt the alternative hypothesis (H_a1) by stating that: monitoring and evaluation planning has a statistically significant and positive influence on the performance of capacity building project in HoCE.

Secondly, it is also observed in Table 4.11 that monitoring and evaluation data management (X_2) has a positive and statistically significant influence on the performance of capacity building project in HoCE as shown by the coefficient β_2=.408 with p=.002<0.05 at a 5% level of significance. This study rejects the null hypothesis ($H_0$2) which stated that: monitoring and evaluation data management has no statistically significant influence on the performance of capacity building project in HoCE. Therefore this study adopts the alternative hypothesis (H_a2) which states that: monitoring and evaluation data management has a statistically significant and positive influence on the performance of capacity building project in HoCE.

Lastly, coefficient β_3=.513 with p=.000<0.05 at a 5% level of significance shows that monitoring and evaluation data dissemination and utilization (X_3) had a positive and statistically significant influence on the performance of capacity building projects in HoCE. Therefore, this study rejects the null hypothesis ($H_0$3) which stated that: monitoring and evaluation data dissemination and utilization has no statistically significant influence on the performance of capacity building project in HoCE. This study hereby adopts the alternative hypothesis (H_a3) which is stated thus: monitoring and evaluation data dissemination and utilization has a positive and statistically significant influence on the performance of capacity building projects in HoCE.

Qualitative Analysis: Content Analysis

Influence of M&E Planning

The interviewees were asked to explain the influence of M&E planning on the performance of capacity building projects in HoCE, how M&E planning influenced performance of capacity building projects and the challenges encountered in M&E planning process.

Firstly, the interview revealed that M&E planning helped to enhance needs assessment during the project design. Respondents argued that through this process, the project implementers and sponsors were able to define the objectives and the qualitative and quantitative targets to be achieved at specified time intervals. HoCE project manager argued that "*through the M&E planning function, we were able to map stakeholders, their needs, priorities and expectations which were incorporated into the project design*". This shows that the M&E planning helped to improve the identification and assessment of project beneficiary priorities thus minimizing resource wastage and misallocation which improved budget efficiency. However, it was also noted that the planning process faced a challenge of resource inadequacy especially funding, mobilization of beneficiaries and limited understanding of horticultural business among beneficiaries.

In regard to organizational structures for M&E, interviewees noted that such structures were important in influencing project performance. Organizational structure describes the hierarchy, reporting lines, and systematic arrangement of work in the project. It is depicted in an organizational chart, showing how the various parts of the project relate to each other. The project manager revealed that "*it is the organizational structure for M&E that executes an organization's M&E functions thus improving project effectiveness and performance*". However, it was also found that M&E structures had limited staffs due to constant staff turnovers, while the few existing ones needed further training on various M&E functions to be more effective.

It was also revealed that HoCE designed M&E frameworks during the planning process which helped in recording and tracking project elements such as resources, activities, outputs, outcomes and results. However, framework used was not appropriate for analyzing the contextual background of the targeted population. The project manager said that "*instead of using a theory*

of change, a log frame was used because there were no M&E experts to generate a comprehensive theory of change". Nevertheless, the logical framework helped to track indicators at each stage of the project implementation.

Influence of M&E Data Management

The project manager revealed that data management has helped to improve human resource development for the project. He argued that "*data management has helped to improve the skills of the project staffs in fundamental elements of monitoring and evaluation which are essential in improving project performance by effectively capturing quality data throughout the project cycle*". However, it was revealed that the organization still lacks adequate tools for remote instant data collection such as ipads and smart phones that can collect data and report it to the central server instantly to speed up the project reporting process. It was also revealed that majority beneficiaries were technologically illiterate and unable to operate mobile data collection tools and softwares.

The project manager also revealed that data management process facilitated data quality control and assurance through constant quality checks and assessments. He argued that "*our data quality manager has been efficiently conducting data quality assessments to determine data validity, reliability, timeliness, precision and integrity. This has helped the organization to ensure that there is unbiased data on project performance*". However, at the time of the study, it was revealed that the M&E data specialist had already left the organization and this was compromising data management processes.

It was also revealed that data management has improved the process of analyzing and reporting on project performance because the process converts data into simple and easy to understand by stakeholders. During the interview, project manager argued that "*analyzing data and making it more clear and understandable enables project stakeholder to make informed choices on the next progress phase of the project*". However, it was also revealed that there was high illiteracy rate among stakeholders who could not read or write which required the use of translator to interpret the project information orally.

Influence of M&E Data Dissemination and Utilization

The project manager revealed that M&E data dissemination and utilization (DDU) helped to improve data access for stakeholders. He argued that "*during data dissemination and utilization process, project decision-makers are able to access the project information in form of reports which helps them to make informed decisions on project progress, review and resource allocation*".

In regard to stakeholder involvement, the project manager also revealed that DDU improved stakeholder participation. He noted that this is made possible because "*during the DDU processes, all stakeholders are mobilized to engage in sessions for the dissemination of findings where they can ask questions as well as put forward suggestions for project improvement*". However, it was also revealed that mobilizing all stakeholders especially beneficiaries to engage in project activities was a challenge because most of them lack effective channels of communication. For example, it was revealed that approximately 36% of the beneficiaries did not have contact telephones. Similarly, some stakeholders were not committed to engage in project programs as they thought that project managers know everything they needed for improving their agricultural output and incomes.

It is also observed that DDU improved stakeholder empowerment because of regular trainings for beneficiary farmers on how to prepare soil, grow fruits and monitor their maturity and engage in agribusiness activities so as to improve their household needs. However, findings showed that more training was needed to end household poverty among the beneficiaries as some farmers were still poor at the time of study.

Lastly, the project manager also revealed that DDU improved project innovations. He argued that "*those innovations came in form of idea exchanges and brainstorming during stakeholder engagement sessions to review project progress and outcomes. This process improved project review and control, thus improving the quality of outcomes and general project performance*".

Qualitative Project Performance

The representative of farmer beneficiaries who participated in the interview was asked to explain his perceptions on the performance of HoCE projects. He argued that the project was generally

performing well but some challenges were still hindering the quality of outcomes. He revealed that drip irrigation, and greenhouse farming technology were required to withstand the effects of climate change and ensure sustainable horticulture farming.

However, the cost of adopting and applying these technologies to farming was still high, unaffordable for most horticultural farmers and this had discouraged some farmers from adopting it the HoCE agricultural model.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Influence of M&E planning on performance of HoCE projects

Findings show that monitoring and evaluation planning has a positive influence on the performance of the capacity building projects in HoCE.

It is observed that M&E planning improves the relevance of the projects, eases formulation of M&E structures and facilitates resource mobilization for project funding and implementation.

The regression coefficient of β_1=.397 with p=.000<0.05 shows that 39.7% of the change in the performance outcomes of HoCE projects can be explained by effectiveness of M&E planning (X_1) functions.

Influence of M&E data management on performance of HoCE projects

Findings show that monitoring and evaluation data management practices have a positive influence on the performance of the capacity building projects in HoCE.

Findings show that data management practices in HoCE projects facilitate capacity building for M&E, involve stakeholders in project processes, encourage accountability and information disclosure which facilitate project performance.

The regression coefficient of β_1=.408 with p=.002<0.05 shows that 40.8% of the change in the performance outcomes of HoCE projects can be explained by effectiveness of M&E data management (X_2) activities.

Influence of M&E data dissemination and utilization on performance of HoCE projects

Findings show that monitoring and evaluation data dissemination and utilization (DDU) have a positive influence on the performance of the capacity building projects in HoCE.

Data shows that DDU function enables stakeholders to access project information and make informed decisions, empowers stakeholders to acquire skills through lessons learned, encourages project innovations, transparency and accountability.

The regression coefficient of β_1=.513 with p=.000<0.05 shows that 51.3% of the change in the performance outcomes of HoCE projects can be explained by effectiveness of M&E data dissemination and utilization (X_1) processes.

Conclusions

The study was conducted on the influence of monitoring and evaluation on project performance using case study of Rwanda-Israel Horticulture Centre of Excellence capacity building projects.

The study was based on the null hypotheses (H_0) which suggested that M&E planning ($H_0$1) M&E data management ($H_0$2) and M&E data dissemination and utilization ($H_0$3) have no statistically significant influence on performance of capacity building project in HoCE.

However, based on the findings, it can be concluded that monitoring and evaluation had a statically significant and positive influence on the performance of Rwanda-Israel HoCE capacity building project.

Therefore, the research rejects the null hypotheses and adopts the alternative hypotheses by clearly stating that M&E planning (H_a1), M&E data management (H_a2) and M&E data dissemination and utilization (H_a3) had statistically significant and positive influence on the performance of Rwanda-Israel HoCE capacity building project.

This is confirmed by the regression coefficients β_1=.397, β_2=.408 and β_3=.513 which show that 39.7%, 40.8% and 51.3% respectively of the positive changes in project performance outcomes are explained by M&E planning (X_1), M&E data management (X_2) and M&E data dissemination and utilization (X_3) respectively.

Recommendations

To Horticultural Centre of Excellence

It is found out that the project stakeholders faced a challenge of poor technology and lack of funds to procure green houses. The HoCE should provide agricultural subsidies to assist horticultural farmers procuring the necessary technology to improve their horticultural farms

There is need to recruit and hire adequate and skilled M&E staffs to effectively conduct the monitoring and evaluation function. This will minimize the problem of limited staffs due to constant staff turnovers as well as improve M&E effectiveness and efficiency.

There is need to digitize the M&E function of HoCE and make data collection more effective and efficient which will help to ensure data is accessible in real time. The organization needs to buy M&E digital tools for remote instant data collection such as ipads, tablets and smart phones that can collect data and report it to the central server instantly.

There is need to improve employee motivation and retention strategies so as to minimize staff turnover in the project's M&E function.

To the Farmer Beneficiary Groups

There is need to engage in self-assisted learning on how to operate the data collection technologies such that farmers can provide real-time data to the project managers during the evaluation process.

There is need lobby for support from other organizations for financial support in the procurement of horticultural farm technologies such as greenhouses, irrigation equipment, etc.

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