Project management practices and sustainability of agricultural projects: Case of Ingabo Plant Health Ltd in Musanze District, Rwanda

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Abstract

The purpose of this research was to assess effect of project management practices on project agricultural project sustainability in Rwanda using a case of Ingabo Plant Health Ltd in Musanze. The research specific objectives were to determine how project planning, project implementation, project monitoring and evaluation affect agricultural project sustainability in Musanze District. The study relied on three relevant theories which are project management theory, resource based theory, and social information theory. The researcher adopted descriptive and correlational research designs. The study targeted 138 community project groups supported by Ingabo Plant Health Ltd in Musanze District. A census and purposive techniques were used to select 138 agricultural group members and 24 agronomists in Musanze District. Primary data was gathered using a questionnaire while interview guide helped to hold interview field officers. Descriptive statistics in term of frequency, percentages, mean and standard deviation helped to assess measurement of research variables whereas regressions analysis helped to find out correction and effect between research variables. Qualitative data was assessed using content analysis. Results felt that 50% strongly agree with the project objectives before the start of Ingabo Plant Health project, 36.6% strongly agreed with resource estimation, 40.2% agreed with on budgeting on time. Correlational analysis evidenced a relationship with the budget efficiency (r=0.119*, p-value=0.048). Estimation budgeting is positive correlated with the budget efficiency (r=0.121, p-value =0.044), product quantity (r=0.102, p-value=0.091). Positive correlations were established with budgeting and product quality (r=0.119*, p-value=0.048), 46.0% strongly agreed with resource acquisition. As strongly agreed, 31.2%, resource allocation, strongly agreed with the execution of farming activities. Results show that resource acquisition was statistically associated with the budget efficiency on 0.176; the cost estimation was associated with product quantity. However, resource allocation is correlated with budget efficiency at 0.845** with product quantity 0.874** and the product quality 0.75. Findings evidenced that 34.1% show a strongly agreement on the field visits. The study established the relationship between monitoring and evaluation and project sustainability. Pearson correlation coefficient r= 0.843 between field visits and budget efficiency was noted. It was 0.871 between field visits and product quantity and 957 between field visits and product quality.The study recommends that project managers should encourage collaboration between variation in capabilities and in keeping children Safety performing well: Social development for attaining program success must focus on management skills to align with risk design. The study proposes to assist beneficiaries to understand effects of project design through various well managed designs. The project team should apply a simple method in order to assess pertinent risks easily. The research proposes to carry out a study on inter-organization factors impeding social protection project to be sustainable. Since, the present research tools into consideration scope, budget and risk which play a role of 83.4% on project success. The study suggests a similar research in other countries and regions to reflect the reality across region. Such results would provide a guideline that may help establishing government policies.

Keywords: *Agricultural projects, Project Implementation, Project Monitoring and Evaluation, Project Planning, Agricultural Project Sustainability.*

1.0 Introduction

Most of the projects that are initiated start with great ideas and full of promising sustainability of outcomes. However, in the course of their lifetime, these projects end up being faced with various challenges that hinder their sustainability. The inability of project managers to plan, implement and follow up is among main contributing factors to unsustainability. Generally, various scholars evidenced the escalating problems of project delays, among the projects investigated only 18% of these projects are sustainable while over 43% and over 59% experience project delays and budget escalation respectively (Leal & Brandli, 2016). Project outcomes in Rwanda have become sustainable while for others performance issues have remained a challenge (Leal & Brandli, 2016).

Results on impact assessment on community-funded projects demonstrated that that only 5 out of 36 project groups in Musanze District were active, while the rest had become defunct and could not be traced after cessation of funding (Kerzner, (2017). There is still persistent food insecurity and poverty among the rural communities in some District like Musanze having 53% of its population still suffering from intense poverty and malnutrition. Most of agricultural projects are either attained late with over budget and others remain uncompleted with no clear accountability (MacConvillec, 2017).

Murangwabugabo, *et al.,*(2022) study on monitoring and evaluation strategies in agriculture points out that practicing lessons from field experience in M&E were investigated but the extent of their sustainability needs more address. Muthoni and Karanja (2019) in a study on practical planning & implementation only addresses the planning aspect in projects. The above previous evidenced took into consideration specific problems related to project management practices, therefore, there was a need to address all management practices and find out their effect on project sustainability in Rwanda with reference to a case of Ingabo Health Plant Project in Musanze District. This study examined the effect of project management practices on agricultural projects sustainability in Musanze Distrcit.

i   To establish the effect of project planning on agricultural project sustainability in Musanze District.

ii   To assess how project implementation affect agricultural projects project sustainability in Musanze District.

iii   To analyze the effect of project monitoring and evaluation on agricultural project sustainability in Musanze District.

2.0 Review of Related Literature

2.1 Empirical Literature

This section discusses previous studies in accordance with specific research objectives of the study. These include: effect project planning, effect project implementation, and effect of project M&E on agricultural project sustainability in Rwanda.

2.1.1 Effect of Project Planning on Agricultural Project Sustainability

Globally, in developed countries, Alelah and Mueke (2017) did a research on Rural Planning in the Developing World rural planners done in developing countries have tended to focus on the provision of social infrastructures like roads, schools, and clinics. The findings of the study show that project plans have been made in offices, remote from the areas being planned and the people who would be affected. This approach makes plans lack domestication to the environments they are supposed to be implemented. His findings revealed that evaluation of youth projects is rarely done and in some of the project's accounting to 23% had not been evaluated at all. The respondents indicated that few youth projects which had operation monitoring and evaluation department were able to identify the problems affecting the projects in advance and hence address the issues before affecting sustainability of the project. According to Chun (2017) in the study on Agricultural project planning and analysis in Belgium, Project planning represents processes during the identification and preparation stages of the project life cycle in which the broad context of project operation is clarified. The planning stage is where particular problem areas are identified and clear objectives are set to achieve the required changes; where alternatives are developed and choices are made; and where appropriate actions are prepared for implementation that the canals and structures worked better, rice yields were 20% higher and the irrigated area 35% greater than in control groups without participation.A report by Assem and Mario (2018) on a study on the planning phase in projects in Britain says that a project manager should consider the six schedule management processes. The study findings show that the development of the schedule baseline will involve activity definition, activity sequencing, activity resource estimation, and activity duration estimation. The Schedule management Plan should be focused on the methods for controlling the schedule. As per the findings, there is positive and significant effect of competency on project implementation ($\beta = 0.037$; t test = 0.338; p-value < 5%). The study concludes that approval of the Project Management Plan, the execution of the Planning project status review, and the approval to proceed to the next phase signify the end of the Planning Phase. In Africa, a research done by Assem & Mario (2018) on Rural District Planning in Ghana, local strategic planning requires data about the condition and trends of natural resources, social and economic conditions. Methods to gather, synthesize and interpret the information are well established. Methods and mechanisms to enable the participation of stakeholders also exist. Likewise, there is positive and significant effect of professionalism on project implementation ($\beta = 0.193$; t test = 1.698; p-value < 5%). This implies that a unit increase in professionalism would lead to increase in project implementation. The findings of the study reveal that assistance in rural planning in a particular country required a structured response which should first involve an assessment of current rural planning arrangements which is planning framework, institutional roles and responsibilities, skills base and an assessment of needs.

In Rwanda, Kiiza and Munene (2022) did a research on the influence of project planning process on performance of food sustainable initiative project in Rwanda.. The specific objectives of the study included determining how schedule influences performance of food sustainable initiative project in Rwanda, to examine the influence of project execution on performance of food sustainable initiative project in Rwanda and to assess the influence of budget on performance of food sustainable initiative project in Rwanda. This study is paramount to different stakeholders including the researcher, future researchers, and sustainable food initiative project, other projects and the government of Rwanda.The study adopted descriptive research design using quantitative and qualitative approaches. The population involved in this study was 6 technical staff from the FSIP and 80 beneficiaries that was taken as target population. To sample respondents, stratified random and non-probability sampling techniques were used, with a sample size of 86 respondents. To acquire primary data, structured questionnaires and interview procedures were used. Using IBM SPSS version 20, descriptive and inferential analysis such as frequencies, percentages, and correlation were employed to provide quantitative data in the form of tables. Results from findings indicated that there was an agreement on how schedule influences performance of the project as 45% of respondents strongly agreed and 38% agreed that the schedule change affects the project to reach its completion with a mean 3.9767 and standard deviation of 0.34220. Besides, the results also revealed that the project execution influences the Performance of the project where 81% of the respondents agreed and 9% strongly agreed with a mean of 3.4884 and standard deviation of 0.68159. Further, the study also indicated that the project budget influences the Performance of the project as 84% of the respondents agreed with a mean of 4.0000 and standard deviation of 3.7573. Besides, the study found that there is insignificant negative correlation of r=-0.681 and p value=0.000 between variables statistically correlated given the p value is <0.005. Finally, the study recommended that to ensure

effective Planning of all project activities, emphasis should be put on Work Break Structure in order to develop a project schedule, as it defines all the work that needs to be completed to achieve the goals and objectives of the project.

2.1.2 Effect of Project Implementation on Agricultural Project Sustainability

Globally, a research done in Europe especially a research done in Italy where Christen and Pearce (2016) on a study on managing risks and designing products for Agricultural projects and International Fund for Agricultural Development in Rome, bureaucracy in Government has affected implementation of policies related to food security issues. These policies cause a delay in the process of availing loans to farmers which will contribute to 50% failure interims of execution of the ventures. With a globally increasing population, combined with the fact that 52% of arable land is a seated by soil degradation, that 12 million hectares are lost to dissertation, and that soil degradation is a contributing factor to 74% of people living in poverty globally, the resulting soil quality losses of conventional agriculture pose a threat to global food security. The effect of tilling include eutrophication due to the worsened soil structure allowing run-o, of nutrients with water, pesticide pollution through water run, greenhouse gas emissions due to the usage of motorized tilling.Kamau, *et al.*, (2021) in a study on the underlying theory of Project Management done in Finland brings forth the underlying theory of project execution. The findings of the study reveal that the underlying theory on project execution provides that dispatching consists of two elements. The bank also played a critical role in creating public awareness about importance of Hidase and saving bond. The Bank's performance in the areas of approval, disbursement, collection and NPL for fiscal year 2016/17 is the Bank's loan approval in preceding plan period was Birr 18.78 Billion, while the actual performance is Birr 12.08 Billion, showing 64% achievement. The loan disbursement plan was Birr 14.08 Billion while the actual performance is Birr 5.38 Billion with 38% achievement of the target. Furthermore, the loan collection plan for the year was Birr 6 Billion, and the actual collection is Birr 4.56 Billion which is 76% of the target. In addition, the total loan outstanding plan of the Bank during the plan period is Birr 42.46 Billion and the actual loan position amounting Birr 33.82 Billion which shows an achievement of 80%. With regards to the NPLs performance, the Bank has planned to cope with 9.76 %, but went up to 24.98%, which indicate lower performance in terms of reducing the NPLs.

In Kenya, MacConvillec (2017) on his study on the issues affecting the viability of church-based organization's donor-funded orphan initiatives in Kenya indicated that financial resources, staff training, leadership approach, community participation and stakeholders' engagement influence positively project sustainability. On the factors that affect the viability of health projects in Nairobi County's public hospitals, reveal project management practices which played a role on project sustainability included stakeholders, mission and goals, leadership structure, capacity building approaches and finance. As a result of delays, there are frequent request for an additional loan for missing items and incomplete construction works and a subsequent loan repayment rescheduling request by most huge and large sized cotton farm projects. Out of the total 200 agricultural projects which are financed by development bank, 28 from the head office and 7 from Jimma district requested for loan repayment rescheduling, interest capitalization and additional working.In Rwanda, Gisagara and Mulyungi (2020) did a research on Community Consultation and Post-Harvest Handling Agribusiness Project Sustainability in Rwanda. The main objective of the study was to assess the effects of community consultation in project sustainability in Rwanda. Community consultation involves a proactive process in which the beneficiaries influenced the development and management of development projects, rather than receiving a share benefit. Community consultation creates an enabling environment for sustainability by allowing users to select the level of services for which they are willing to pay, to guide key investment and management decision and commit resources in support of these choices. This study was to assess the effects of community consultation in project sustainability in Rwanda. The research used descriptive research design by considering both quantitative and qualitative. The targeted population was 155,518 targeted beneficiaries of PASP project, cooperative managers (35) under the support of PASP, Cooperative support officers (68) from Rwanda Youth in Agribusiness Forum (RYAF) who are under the support of PASP grant also PASP field staff (12) from which a sample size of 416 respondents was selected. The research used structured questionnaires to collect data from the targeted beneficiaries and other related stakeholders of PASP project. Both Primary and secondary data were collected by using open ended questionnaire for primary data. Results show that community consultation influences the Project Sustainability of Post-harvest agriculture Project. This means that during the period of project implementation; Post-Harvest and Agri-Business Support Project accommodated its beneficiaries suggestions at 85.8% and this contributed to the performance of Post-Harvest and Agri-Business Support Project. The PASP Project has been successfully achieved its goal. The results shown in chapter four, shows that the majority of beneficiaries have been participated on community consultation and community awareness. PASP Project stakeholders an government should continue and improve on working closely with beneficiaries because, working together with beneficiaries have a significant impact in project sustainability.

2.1.3 Effect of Project Monitoring and Evaluation on Agricultural Project Sustainability

Globally, in Europe, a research done by Doyle (2016) asserts that monitoring in general sense is used to describe a systematic framework to collect and analyze information on events associated with implementation policy with the view to improving the management. The findings in the study show that while perceptions as to the role and function of M&E may vary, its role as a key element of the project cycle is incontrovertible. The study computed into single variables per factor by obtaining the averages of Community involvement, availability of resources, training of project staff and Monitoring and evaluation. Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed. Table 1 indicates the correlation matrix between the factors (Community involvement, availability of resources, training of project staff and Monitoring and evaluation) and sustainability of donor funded agricultural projects. In America, a research done by Hayes (2018) points out the use of monitoring and evaluation in agriculture and rural development projects done in the U.S.A. The study reveals that while monitoring and evaluation (M&E) is recognized to be a key element in understanding and effectively tracking and documenting the results of development interventions, it is also admitted that there is a general need to improve M&E in development work. As per table 1 there is a positive relationship between sustainability of donor funded agricultural projects and community involvement as shown by coefficient of 0.714, a positive relationship between sustainability of donor funded agricultural projects The findings show that As far as completed projects are concerned, with very few exceptions, the M&E systems have been poorly developed and implemented at the field level. In Asia, Kamau, *et al.*, (2021) on a study conducted on M&E as Learning: Rethinking the Dominant Paradigm M&E is at the heart of managing for impact which is meant to respond to changing circumstances and increased understanding, and managing adaptively so that the

project is more likely to achieve its intended impacts. a positive relationship between sustainability of donor funded agricultural projects and training of project staff as expressed by coefficient of 0.522 and a positive relationship between sustainability of donor funded agricultural projects and Monitoring and evaluation as illustrated by a coefficient of 0.672. This shows all variable were significant in determining the influence of implementation of quality management system on sustainability of donor funded agricultural projects in the study revealed that a well-designed M&E system provides data on the progress of a project and whether it is meeting objectives. In Africa, especially in Kenya, after the project is completed the responsibility for the management and maintainability of the project is given to the community (Muthoni and Karanja, 2019). However, it has been noted that some projects become noticeably unsuccessful, even without any technical failure while others have achieved their targets without much difficulties. From the findings, the independent variables were statistically significant predicting the dependent variable since adjusted R square was 0.716. This implied that 71.6% variations in sustainability of donor funded agricultural projects. The study recommends that the success of the project's sustainability should be attributed to the underlying practices considered and identifying the causes for project performance is significant for employing the practices which enhances sustainable management of the existing and new development projectsIn Rwanda, all the analysis was prepared by using SPSS version 20. Qualitative data were analyzed through content analysis. The results indicated that all the variables, project planning, project implementation, project Monitoring and Evaluation and project communication were significant on project performance. Project Environmental enablers (moderating variable) were found to have an influence on the relationship between project management practices and project performance (Murangwabugabo, *et al.*, 2022). From the ANOVA Table, p-value was 0.000 and F-calculated was 35.048. Since p-value was less than 0.05 and the F-calculated was greater than F-critical (2.455), then the regression relationship was significant in determining how community involvement, availability of resources, and training of project staff and Monitoring and evaluation influenced sustainability of donor funded agricultural projects. The research concludes that there is a positive relationship between project management practices and the performance of agricultural projects in Rwanda at a very high extent.

2.2 Theoretical Framework

This study was guided by a number of relevant theories such as theory of constraints, theory of management; and resource based theory.

2.2.1 Theory of Constraints (TOC)

Kamau, *et al.*,(2021) developed the theory of constraints which is a project management theory that denotes that the strength of any chain is only as good as its weakest link. It assists organizations in achieving their goals by providing a mechanism to gain better control of their initiatives. For any project to perform there is a need to minimize challenges that may reduce quality and quantity of services delivered. These are for instance poor management practices such as cost overruns caused by poor budgeting and corruption. This study augmented its discussion on this theory since it checks on issues that can limit project sustainability.
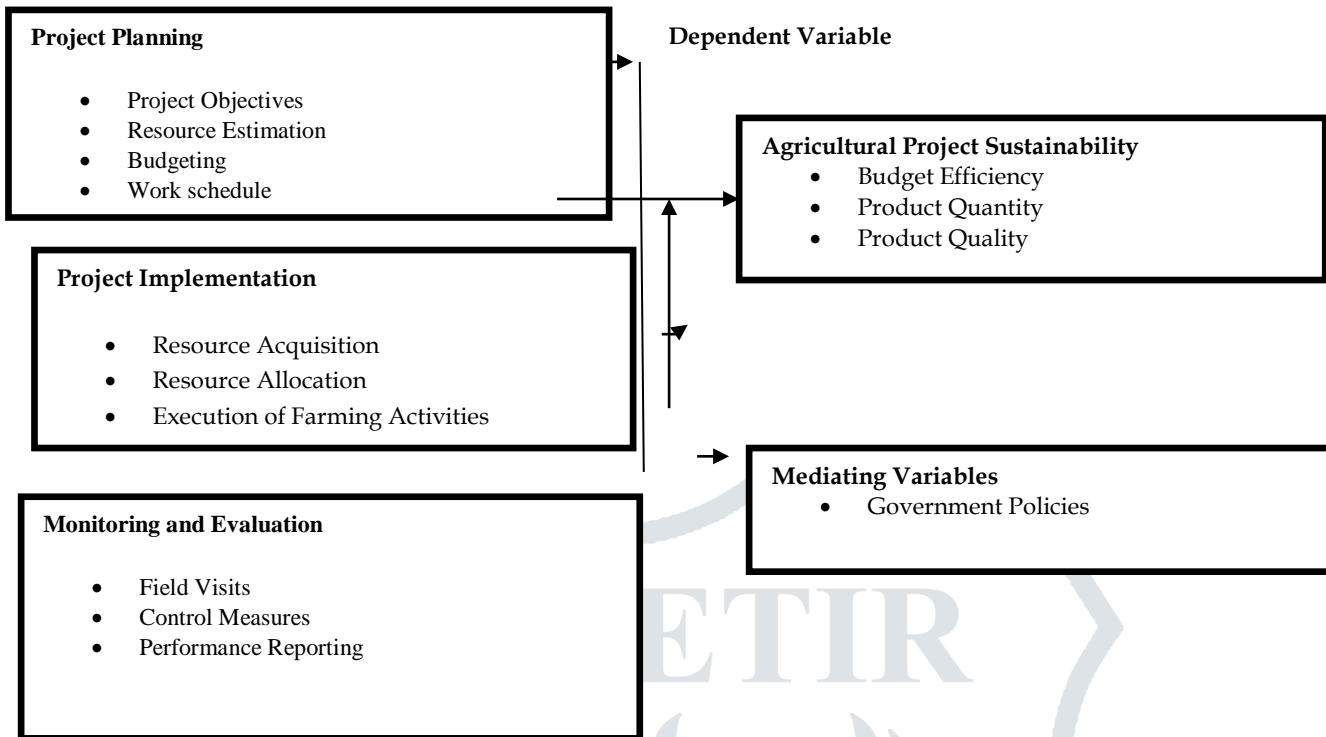
2.2.2 Theory of Change

Theory of change was helpful in clarifying results and describing techniques to copy with unfavorable social phenomenon. This model is pertinent in designing and focusing on the planning framework in initial phase of designing not of execution phase (Barney, 2018). The pertinent stakeholders, anticipations, expected results and some key parameters are accessible as a basis for the planning practices. As this model improves awareness of beneficiaries and stakeholders, this help in using planned deliverables and outcomes and improve the effect awareness. This approach help stakeholders to consider a wide range of services, observing at the issue the project is responding, the larger situation and adjustment in correlations with stakeholders and unplanned results. Theory of Change is described as an explanatory means of how all components are necessary to meet expected outcomes for any project. This is a combination of components like results, achievement and requirements contained in a graphical presentation ((Muthoni & Karanja, 2019).In this study, the theory of change relevant was very relevant because it helped the researcher to develop an integrated conceptual framework for impact that brings together the issue context, the research project, intend users and research-into-use strategies.

2.3 Conceptual Framework

The conceptual framework establishes the correlation between project management practices and agriculture project sustainability in Rwanda.

Independent Variable

Project Management Practices

Dependent Variable

Project Planning
• Project Objectives • Resource Estimation • Budgeting • Work schedule

Agricultural Project Sustainability
• Budget Efficiency • Product Quantity • Product Quality

Project Implementation
• Resource Acquisition • Resource Allocation • Execution of Farming Activities

Mediating Variables
• Government Policies

Monitoring and Evaluation
• Field Visits • Control Measures • Performance Reporting

Information presented in Figure 2.1 shows the relationship between project management practices and agricultural project sustainability. In this regards, project management practices are project planning, project implementation, monitoring and evaluation. Moreover, project planning will be measures using project objectives, resource estimation, budgeting, and work schedule but also assumption of risks. Project implementation was measured using resource acquisition, resource allocation, execution of farming activities, and risk Mitigation. Monitoring and evaluation will be measured using field visits, control measures, performance reporting. The dependent variable (Agricultural project sustainability) was assessed using budget efficiency, attained expected goals, product quantity, and product quality. Finally, both independent and dependent variables were moderated by government policies.

3.0 Research Methodology

According to Saunders, Lewis, and Thornhill (2017), no single design exists in isolation. They argue that combining different designs in one study enables triangulation and increases the validity of the findings. This research employed both descriptive and correlational research designs with a mixed approach (qualitative and quantitative approaches). Descriptive research design affords opportunity to capture a population's characteristic and test hypothesis (Alvi, 2016). Correlational research design looks for regression size effect between independent and dependent variables for each specific objective of the study. This study used descriptive and correlational research designs since it adopted a mixed approach to test research hypothesis set.

3.1 Target Population

The target population of this study consists of 138 agricultural project groups and 24 field officers in Musanze District. A list of active and registered agriculture project groups was provided by MINAGRI (2023). A census approach was adopted to get the sample size. In this regard, a census method refers to a statistical investigation in which the data gathered for each and every element/unit of the population. It is also known as 'complete enumeration' or '100% enumeration' or 'complete survey (Bernard, 2019). In this regard, all respondents were 138 agricultural group members and 24 agronomists were considered. The study used a census approach considered for taking 138 agricultural group members and 24 key informants were selected using a purposive sampling technique. The agricultural projects representing each sector were chosen.The study used a combination of data collection methods that comprises of qualitative and quantitative approaches

Data were obtained using both questionnaire and an interview guide.This research produced qualitative and quantitative information. Qualitative information will be examined relying on content analysis. Quantitative data was analyzed using descriptive and inferential statistics. Descriptive statistics like frequencies, percentages, mean and standard deviations were calculated to assess feature of research variables. To find the correlation between research variables and to test hypotheses, the research used inferential statistics in term of correlation and regression analysis. The following regression equation was used. Agriculture project sustainability, the dependent variable was shown by (Y) while project management practices, the independent variable (X), project planning, project implementation, and monitoring & evaluation, will be indicated by X_1, X_2, and X_3.

Where $Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots E$

Y= Agriculture Project Sustainability

X1= Project Planning

X2= Project Implementation

X3= Monitoring & Evaluation

4.0 Presentation of Findings

Results on the contribution of project management practices on sustainability of agricultural projects was analysed in accordance with specific objectives and research variables. These objectives are to establish the effect of project planning on agricultural project sustainability in Musanze District; to assess how project implementation affect agricultural projects project sustainability in Musanze District; and analyse the effect of project monitoring and evaluation on agricultural project sustainability in Musanze District.. The study started with descriptive statistics for independent and dependent variable. The study assessed whether agricultural projects have been sustained in Musanze District in accordance with Ingabo Plant Health Ltd in Musanze Distrcit, Rwanda. In this context, the Budget Efficiency, Attained Expected Goals, Product Quantity and Product Quality were used to assess the project sustainability.

Table 4. 1 Agricultural Projects Project Sustainability in Musanze District

Statement	Strongly Disagree		Disagree		Agree		Strongly Agree		N	Total Mean	Std
	N	%	N	%	N	%	N	%			
Budget Efficiency	66	6.9	86	20.6	32	53.9	85	18.6	159	2.843	0.8052
Product Quantity	24	6.9	40	4.9	89	24.5	94	63.7	159	3.451	0.8746
Product Quality	43	8.8	85	6.9	59	18.6	79	65.7	159	3.411	0.9581

Source: Primary data (2023)

Information above shows that 53.9% of respondents agreed to have noted a recorded Budget Efficiency in executing agricultural projects project after obtained support from Ingabo Plant Health Ltd. Moreover, 63.7% show a strong agreement with an increase of of product quantity. Information from interviews indicates that Ingabo Plant Health Ltd improved the product quantity. The country director of the project sector argues "in this district, we have attempted to give support to beneficiaries all sectors where farmer groups received seeds, fertilizers and agricultural material and equipment." This leads to an increase of product quantity and reduced the malnutrition in the District. Moreover, 65.7% also strongly agreed that product quality has been improved. The country director of Ingabo Plant Health Ltd held interview with the researcher and argues "in after support from the project, farmers were able to improve the quality of agricultural production".

4.1.1 Effect of Project Planning on Project Sustainability in Musanze District

The study assessed the effect of project planning on project sustainability in Musanze district. In this regards, the researcher started with respondents views on the use of project planning at Ingabo Plant Health Ltd. This was measured using project objectives, resource estimation, budgeting and work schedule, and assumption of risks. A Likert scale was used as 1=Strongly Disagree (SD), 2=Disagree (D), 3=Neutral (N), 4=Agree (A), 5=Strongly Agree (SA).

Table 4.2 Project Planning

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		N	Total Mean	Std
	N	%	N	%	N	%	N	%	N	%			
Project Objectives	6	2.2	70	25.4	2	0.7	60	21.7	138	50.0	159	3.9	1.310
Resource Estimation	26	9.4	50	18.2	20	7.2	80	29.0	100	36.2	159	3.6	1.374
Budgeting	68	24.6	3	1.8	5	1.1	111	40.2	89	32.2	159	3.5	1.554
Work schedule	37	13.4	41	14.9	20	7.2	103	37.3	75	27.3	159	3.5	1.379

Source: Primary Data (2023)

Information demonstrated that 50% of respondents with a mean equal to 3.9 and standard deviation equal to 1.310 strongly agree with the project objectives before the start of Ingabo Plant Health project. In addition, 36.6% of respondents with a mean equal to 3.6 and standard deviation equal to 1.374 strongly agreed with resource estimation, 40.2% of respondents with a mean of 4.1 and standard deviation of 1.554 agreed with on budgeting on time. Furthermore, 37.3% of respondents with a mean equal to 3.5 and standard deviation equal to standard deviation 1.379 strongly agreed that work schedule.

Table 4.3 Correlation between Project Planning and Project Sustainability in Musanze District

		Budget Efficiency	Product Quantity	Product Quality
Project Objectives	Pearson Correlation	.119*	.049	.074
	Sig.(2-tailed)	.048	.414	.223
	N	159	159	159
Resource Estimation	Pearson Correlation	.025	.007	.098
	Sig.(2-tailed)	.683	.910	.105
	N	159	159	159
Budgeting	Pearson Correlation	.121*	102	.005
	Sig.(2-tailed)	.044	.091	.939
	N	159	159	159
Work schedule	215	0.244	0.512*	215
	0.048	0.346	0.036	0.048
	159	159	159	159

Source: Primary Data (2023)

Results indicate an association between variables. Therefore, information on project objectives reveals that project objectives did not have a correlation with product quantity (r=0.049, p-value=0.414), with the product quality (0.074, p value=0.223). Correlational analysis evidenced a relationship with the budget efficiency (r=0.119*, p-value=0.048). This was associated since level of significance was < 0.05 suggesting that a change in resource estimation stimulate the budget efficiency. Contrary to insignificant relationship between resource estimation and product quantity (r=0.025, p-value=0.685), Resource estimation with product quality (r=0.007, p-value=0.910) and resource estimation with the product quality (r=0.098, p-value=0.105). The correlations were insignificant provided that the level of significance is >0.05 denoting that increase of resource estimation did not affect budget efficiency product quantity, product quality and vice versa. Moreover, the findings indicated insignificant correlation between budgeting and the product quality (r=0.005, p-value=0.919). The above consideration felt insignificant correlations since the level of significant was more than 0.05 suggesting that the budgeting did not product quality. However, estimation budgeting is positive correlated with the budget efficiency (r=0.121, p-value =0.044), product quantity (r=0.102, p-value=0.091). Positive correlations were established with budgeting and product quality (r=0.119*, p-value=0.048). There are significant correlations found between work schedule and the budget efficiency (r=0.215*, p-value=0.048), work schedule and product quantity (0.512*, p-value= 0.036) and work schedule and the product quality (r=0.546*, p-value=0.023). The above relationships were significantly established since the level of significance was more than 0.05 that a change in work schedule produced a change in budget efficiency, product quantity , product quality and the vice versa. The project manager argues "the organization has applied adequate work schedule that enable beneficiaries to take part in designing for children who would have right budget efficiency, product quantity and product quality.

Table 4.4 Regression Coefficients between Project Planning and Project Sustainability in Musanze District

Model		Unstandardized Coefficients		Standardization Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.883	.416		6.925	.000
	Project Objectives	.126	.056	.129	2.142	.033
	Resource Estimation	.035	.079	.026	.440	.660
	Budgeting	.143	.064	.134	2.239	.026

Work schedule	.237	.070	.372	4.460	.000

a. Dependent Variable: **Project Sustainability**

Source: Primary Data (2023)

Data given, evidenced that $Y=2.883 +0.129 X_1+0.026 X_2+0.134 X_3 + b_4X_4+e$ where y= project sustainability in Musanze District. This shows the regression of independent variables was associated with project sustainability in Musanze district except project objectives. It demonstrated that project objectives is significantly correlated with project sustainability in Musanze District (b=0.129, p-value=0.033). It felt that adjustment in project objectives significantly affects project sustainability in Musanze District. Resource estimation was insignificantly correlated with project sustainability in Musanze District (b=0.026, p-value=0). It means that resource estimation did not affect project sustainability in Musanze District Budgeting was significantly correlated with project sustainability in Musanze District (b=0.134, p-value =0.026). It means that budgeting affects project sustainability in Musanze District.

4.1.2 Project Implementation on Agricultural Project Sustainability

The project implementation was undertaken in Musanze District. This was examined based on how project implementation was done and applied in the project. This was examined in term of resource acquisition, resource allocation, execution of farming activities, and risk mitigation. A Likert scale was used as 1=Strongly Disagree (SD), 2=Disagree (D), 3= Neutral (N), 4=Agree (A) m 5=Strongly Agree (SA).

Table 4.5 Project Implementation

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		N	Total Mean	Std.
	N	%	N	%	N	%	N	%	N	%			
Resource Acquisition	12	8.3	22	8.0	11	4.0	104	37.7	127	46.0	159	4.1	1.094
Resource Allocation	63	22.8	44	15.9	5	1.8	78	28.3	86	31.2	159	3.2	1.589
Execution of Farming Activities	53	19.2	51	18.5	19	4.0	65	23.6	96	34.6	159	3.3	1.567
Risk Mitigation	47	17.0	48	17.4	15	5.4	73	26.4	73	33.7	159	3.4	1.515

Source: Primary Data (2023)

The study findings presented in Table 4.5 give evidences on project implementation in Ingabo Heatlh Plant in Misanze District. In this regards, 46.0% of respondents, mean (4.1) and standard deviation (1.094) strongly agreed with resource acquisition. As strongly agreed, 31.2% of respondents, mean (3.2) and standard deviation (1.589), resource allocation, 34.6, mean (3.3) and standard deviation (1.567) strongly agreed with the execution of farming activities, while 37.3% of respondents, mean 3.5, standard deviation 1.379 strongly agreed with the risk mitigation. Quantitative information was relevant with evidences from interview held with Key informants. He says "project implementation is very important and undertaken because selecting farmers and groups to be supported necessitude effective implementation of agricultural project in term seeds, fertilized, training and other equipment".

Table 4. 6 Correlation between Project Implementation on Agricultural Project Sustainability

		Budget Efficiency	Product Quantity	Product Quality
Resource Acquisition	Pearson Correlation	.232**	.160**	.176**
	Sig.(2-tailed)	.000	.001	.000
	N	159	159	159
Resource Allocation	Pearson Correlation	.284**	.189**	.325**
	Sig.(2-tailed)	.000	.000	.000
	N	159	159	159
Execution of Farming Activities	Pearson Correlation	.845**	.874**	.751**
	Sig.(2-tailed)	.000	.000	.000
	N	159	159	159
Risk Mitigation	Pearson Correlation	.887**	.873**	.864**

Sig.(2-tailed)		.000	.000	.000
N		159	159	159

Source: Primary Data (2023)

Results indicate the relationship matrix between project implementation (resource acquisition, resource allocation, execution of farming activities and risk mitigation) and project sustainability (budget efficiency, product quantity, and product quality). Results show that resource acquisition was statistically associated with the budget efficiency on 0.176; the cost estimation was associated with product quantity. However, resource allocation is correlated with budget efficiency at 0.845** with product quantity 0.874** and the product quality 0.751**. Execution of farming activities is correlated with budget efficiency at 0.887** with product quantity at 0.873** and with product quality at 0.864**

Table 4.7 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.568	.052		11.006	.000
	Resource Acquisition	.067	.021	.091	3.124	.002
	Resource Allocation	.139	.023	.192	6.163	.000
	Execution of Farming Activities	.240	.034	.365	7.118	.000
	Risk Mitigation	.234	.056	.322	4.168	.000

a. Dependent Variable: Project Sustainability

Source: Primary Data (2023)

Results presented in Table 4.7 demonstrated that a unit change in resource acquisition lead to the project sustainability by 9.1%, resource allocation led to a change in the project sustainability by 19.2%. In addition, the execution of farming activities led to a change in the project sustainability by 3.4% and finally a variation in risk mitigation project sustainability by 5.6%.

4.1.3 Effect of Monitoring and Evaluation practices on Project Sustainability in Musanze District

The third research objective ascertained effect of effect of monitoring and evaluation practices on project sustainability in Musanze District. The measurements of monitoring and evaluation practices were field visits, control measures and performance reporting.

Table 4.8 Monitoring and Evaluation practices for Project Sustainability in Musanze District

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		N	Total Mean	Std
	N	%	N	%	N	%	N	%	N	%			
Field Visits	24	8.7	40	14.5	29	10.5	89	32.2	94	34.1	159	3.6	1.309
Control Measures	43	15.6	85	30.8	10	3.8	59	21.1	79	28.6	159	3.1	1.506
Performance Reporting	66	23.9	86	31.2	7	2.5	32	11.6	85	30.8	159	2.9	1.619

Source: Primary Data (2023)

Findings in Table 4.8 give evidences related to monitoring and evaluation practices for project sustainability in Musanze District. In this regards, 34.1% of respondents, mean (3.6) and standard deviation (1.309) show a strongly agreement on the field visits. Moreover, 30.8% of respondents with a mean equal to 3.1 and a standard deviation equal to 1.506 strongly disagreed with the control measures. The same percentage with a mean equal to 2.9 and a standard deviation equal to 1.619 strongly agreed that performance reporting. The study concurs with an interview with project manager in the District. The project manager remarks "the beneficiaries assisted the organization and project team to monitor and evaluate in order to ensure project sustainability".

Table 4. 9 Correlations between Monitoring and Evaluation practices for Project Sustainability in Musanze District

		Budget Efficiency	Product Quantity	Product Quality
Field Visits Control Measures	Pearson Correlation	.843**	.871**	.957**
	Sig.(2-tailed)	.000	.000	.000
	N	159	159	159
Field Visits Control Measures	Pearson Correlation	.852**	.873**	.949**
	Sig.(2-tailed)	.000	.000	.000

	N	159	159	159
Field Visits	Pearson Correlation	.962**	.934**	.863**
	Sig.(2-tailed)	.000	.000	.000
	N	159	.159	159
Risk response analysis	Pearson Correlation	.827**	.843**	.934**
	Sig.(2-tailed)	.000	.000	.000
	N	159	159	159

Source; Primary Data (2023)

The study established the relationship between monitoring and evaluation and project sustainability. Pearson correlation coefficient r= 0.843 between field visits and budget efficiency was noted. It was 0.871 between field visits and product quantity and 957 between field visits and product quality. It implies positive correlation between variables. Each of these elements significantly increases project sustainability when they are improved.Furthermore, findings evidenced that the correlation between control measures on one hand and budget efficiency on the other hand was 0.852**, the correlation between control measures and product quantity was 0.873** and the correlation between control measures and product quality was 0.949**. Moreover, performance reporting is correlated with budget efficiency 0.962**, it has a significant relationship with Product quantity at .934** and with product quality was at 0.863**.

Table 4. 10 Regression Coefficients between Monitoring and Evaluation practices for Project Sustainability in Musanze District

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.346	.119		2.919	.004
	Field Visits	.025	.097	.025	.257	.798
	Control Measures	-.113	.098	-.110	-1.156	.250
	Performance Reporting	.856	.052	.915	16.515	.000

a. Dependent Variable: Project Sustainability

Source: Primary Data (2023)

Results demonstrated that the project sustainability would be at 0.25, a unit change in field visits lead to the project sustainability limited by a factor of 0.97.

5.0. Empirical Literature

This section discusses previous studies in accordance with specific research objectives of the study. These include: effect project planning, effect project implementation, and effect of project M&E on agricultural project sustainability in Rwanda.

5.1.1 Effect of Project Planning on Agricultural Project Sustainability

Globally, in developed countries, Alelah and Mueke (2017) did a research on Rural Planning in the Developing World rural planners done in developing countries have tended to focus on the provision of social infrastructures like roads, schools, and clinics. The findings of the study show that project plans have been made in offices, remote from the areas being planned and the people who would be affected. This approach makes plans lack domestication to the environments they are supposed to be implemented. His findings revealed that evaluation of youth projects is rarely done and in some of the project's accounting to 23% had not been evaluated at all. The respondents indicated that few youth projects which had operation monitoring and evaluation department were able to identify the problems affecting the projects in advance and hence address the issues before affecting sustainability of the project.According to Chun (2017) in the study on Agricultural project planning and analysis in Belgium, Project planning represents processes during the identification and preparation stages of the project life cycle in which the broad context of project operation is clarified. The planning stage is where particular problem areas are identified and clear objectives are set to achieve the required changes; where alternatives are developed and choices are made; and where appropriate actions are prepared for implementation that the canals and structures worked better, rice yields were 20% higher and the irrigated area 35% greater than in control groups without participation.A report by Assem and Mario (2018) on a study on the planning phase in projects in Britain says that a project manager should consider the six schedule management processes. The study findings show that the development of the schedule baseline will involve activity definition, activity sequencing, activity resource estimation, and activity duration estimation. The Schedule management Plan should be focused on the methods for controlling the schedule. As per the findings, there is positive and significant effect of competency on project implementation (β = 0.037; t test = 0.338; p-value < 5%). The study concludes that approval of the Project Management Plan, the execution of the Planning project status review, and the approval to proceed to the next phase signify the end of the Planning Phase.In Rwanda, Kiiza and Munene (2022) did a research on the influence of project planning process on performance of food sustainable initiative project in Rwanda.. The specific objectives of the study included determining how schedule influences performance of food sustainable initiative project in Rwanda, to examine the influence of project execution on performance of food sustainable initiative project in Rwanda and to assess the influence of budget on performance of food sustainable initiative project in Rwanda. This study is paramount to different stakeholders including the researcher, future researchers, and sustainable food initiative project, other projects and the government of Rwanda.

5.1.2 Effect of Project Implementation on Agricultural Project Sustainability

Globally, a research done in Europe especially a research done in Italy where Christen and Pearce (2016) on a study on managing risks and designing products for Agricultural projects and International Fund for Agricultural Development in Rome, bureaucracy in Government has affected implementation of policies related to food security issues. These policies cause a delay in the process of availing loans to farmers which will contribute to 50% failure interims of execution of the ventures. With a globally increasing population, combined with the fact that 52% of arable land is a seated by soil degradation, that 12 million hectares are lost to dissertation, and that soil degradation is a contributing factor to 74% of people living in poverty globally, the resulting soil quality losses of conventional agriculture pose a threat to global food security. The effect of tilling include eutrophication due to the worsened soil structure allowing run-o, of nutrients with water, pesticide pollution through water run, greenhouse gas emissions due to the usage of motorized tilling.

According to Hayes (2018) on a study titled household food insecurity in Sub Saharan Africa, reveal that for project management to achieve project performance, literacy levels of the implementers should be satisfactory to ensure minimal penetration in terms of growth and advancement in society. Lack of access to formal education and training has contributed greatly to low employment and understanding of issues that contribute to project implementation. The study finds out that that the educated populations are able to internalize concepts and processes related to project management easily especially in agricultural setups in rural areas where women dominate. It declared that they would be working intensively to reach a goal of having a 20% of the market share for groceries by 2020. It is would not only bring more organic products to the market, but also create more farmer jobs. In addition, there is the further the issue of organic farming in Sweden relying heavily on subsidies. It might be the case that demand is not high enough to make it competitive on the market by itself without support from the government.

In Kenya, MacConvillec (2017) on his study on the issues affecting the viability of church-based organization's donor-funded orphan initiatives in Kenya indicated that financial resources, staff training, leadership approach, community participation and stakeholders' engagement influence positively project sustainability. On the factors that affect the viability of health projects in Nairobi County's public hospitals, reveal project management practices which played a role on project sustainability included stakeholders, mission and goals, leadership structure, capacity building approaches and finance. As a result of delays, there are frequent request for an additional loan for missing items and incomplete construction works and a subsequent loan repayment rescheduling request by most huge and large sized cotton farm projects. Out of the total 200 agricultural projects which are financed by development bank, 28 from the head office and 7 from Jimma district requested for loan repayment rescheduling, interest capitalization and additional working.

In Rwanda, Gisagara and Mulyungi (2020) did a research on Community Consultation and Post-Harvest Handling Agribusiness Project Sustainability in Rwanda. The main objective of the study was to assess the effects of community consultation in project sustainability in Rwanda. Community consultation involves a proactive process in which the beneficiaries influenced the development and management of development projects, rather than receiving a share benefit. Community consultation creates an enabling environment for sustainability by allowing users to select the level of services for which they are willing to pay, to guide key investment and management decision and commit resources in support of these choices. This study was to assess the effects of community consultation in project sustainability in Rwanda.

5.1.3 Effect of Project Monitoring and Evaluation on Agricultural Project Sustainability

Globally, in Europe, a research done by Doyle (2016) asserts that monitoring in general sense is used to describe a systematic framework to collect and analyze information on events associated with implementation policy with the view to improving the management. The findings in the study show that while perceptions as to the role and function of M&E may vary, its role as a key element of the project cycle is incontrovertible. The study computed into single variables per factor by obtaining the averages of Community involvement, availability of resources, training of project staff and Monitoring and evaluation. Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed. Table 1 indicates the correlation matrix between the factors (Community involvement, availability of resources, training of project staff and Monitoring and evaluation) and sustainability of donor funded agricultural projects.

In Rwanda, all the analysis was prepared by using SPSS version 20. Qualitative data were analyzed through content analysis. The results indicated that all the variables, project planning, project implementation, project Monitoring and Evaluation and project communication were significant on project performance. Project Environmental enablers (moderating variable) were found to have an influence on the relationship between project management practices and project performance (Murangwabugabo, *et al*., 2022).

5.0 Conclusions and Recommendations

In conclusion, the researcher argued that project planning practices used at Ingabo Plant Health Ltd include project objectives, resource estimation, budgeting and work schedule. Therefore, information on project objectives reveals that project objectives did not have a correlation with product quantity with the product quality (0.074, p value=0.223). The correlations were insignicant provided that the level of significance is >0.05 denoting that increase of resource estimation did not affect budget efficiency product quantity, product quality and vice versa. The project implementation was undertaken in Musanze District and the most commonly used by the company are resource acquisition, resource allocation, execution of farming activities, and risk mitigation. Results show that resource acquisition was statistically associated with the budget efficiency; the cost estimation was associated with product quantity. The third research objective ascertained effect of effect of monitoring and evaluation practices on project sustainability in Musanze District. The researcher concluded that the most measurements adopted are field visits, control measures and performance reporting. The study implies positive correlation between variables. Each of these elements significantly increases project sustainability when they are improved. Furthermore, findings evidenced that the correlation between control measures on one hand and budget efficiency.

Reconsidering the findings from the present study, the following recommendations were drown from concluding remarks: Project managers should encourage collaboration between variation in capabilities and in keeping children Safety performing well: Social development for attaining program success must focus on management skills to align with risk design. The study proposes to assist beneficiaries to understand effects of project design through various well managed designs. Project team members and beneficiaries would understand that their design projects in an effective manner that is capable to facilitate project performance. The project scope must be used to determine project cost with WBS being linked to project plan. The estimation of cost of personal activities relied on implementation conditions would assist in generating overall cost estimation. This research recommended development of time schedules, precise and achievable plan, an accurate sequencing of actions. At the time plan without follow up is not pertinent to the project organization therefore checking and controlling them should be carried out for identifying deviations as early as possible. The project team should apply a simple method in order to assess pertinent risks easily. In addition, it provides possibilities notice and identify risks with the greatest effect on timeliness, cost effective and quality of services. The research proposes to carry out a study on inter-organization factors impeding social protection project to be sustainable. Since, the present research tools into consideration scope, budget and risk which play a role of 83.4% on project success, another similar research may contribute to 16.6%. The study suggests a similar research in other countries and regions to reflect the reality across region. Such results would provide a guideline that may help establishing government policies.

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