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Critical factors responsible for project performance in modern agriculture in Rwanda. The Case of Potato Project in Bramin Ltd

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ABSTRACT

The findings on the third objective showed that stakeholders' involvement influences project performance, it was also shown that there is substantial high degree of positive correlation of 0.772 between stakeholders' involvement and project performance in modern agriculture it was concluded that effective management of critical factors leads to positive performance in modern agriculture. The specific objectives of this study were: To assess the influence of management skills on project performance in modern agriculture in Bramin Ltd; to evaluate the influence of monitoring and evaluation on project performance in modern in Bramin Ltd and to find the influence of stakeholders' involvement on project performance in modern agriculture in Bramin Ltd. This study used correlation research design in order evaluate the influence of critical factors on project performance in modern agriculture in Bramin Ltd. Qualitative data were analyzed by using thematic method, Karl Pearson product moment correlation coefficient was used to establish the relationship between variables while regression analysis was used to check the influence of critical factors to project performance. The findings on the second objective showed that 63.7 percent of contract workers agreed that Feedback session is fruitful to this project at 2.34 of mean; 55.8 percent of contract workers agreed that Frequency of field days improves the performance of agricultural projects. The findings on the first objective showed that resource management skills, communication and motivation, organization and delegation forward planning and strategic thinking as well as problem solving and decision making are considered as management skills as it was confirmed by 82.8 percent of contract workers agreed that greenhouse method is applied in this. The study recommends that national budget planners and intervening people should provide financial facilities and make effective set up that should enhance performance of modern agriculture.

Keywords: *Project, Performance, Modern Agriculture.*

I. INTRODUCTION

Although roads are critical for facilitating incoming and leaving markets, irrigation expansion was perhaps the most important supportive investment (Almeida & Fernandes, 2017).Farmers' socioeconomic characteristic in Malawi, such as high illiteracy and poverty rates, low involvement in project execution, and a high dependence syndrome, all had major impact on agricultural project success (Hawonga, 2018). Agricultural productivity increase have cascading effect on the rest economy, creating jobs in nearby industries like food processing and input access, as well as attempting to direct agriculture; increasing the

supply of inexpensive food; and motivating but also supporting wider economic progress and development by continuing to increase the supply of affordable food(Boom, 2013). Hawonga (2018) also stated that this model explains 65.4 percent of total variability, suggesting that 65.4 percent of the sluggish performance of modern farming schemes in eradicating poverty among small scale farmers is resulted from high farmer's analphabetism and poverty, poor farmer involvement during project delivery, and addition syndrome .Agriculture, which accounts for 32.7 percent of GDP (2015), is also the most important engine of economic growth (7.6% in 2015) and poverty reduction, accounting for 35 percent of the entire reduction in poverty rates over the last decade.

The objectives of the paper are:

i. To assess the influence of management skills on project performance in modern agriculture in Bramin Ltd Rwanda.
ii. To evaluate the influence of monitoring and evaluation on project performance in modern agriculture in Bramin Ltd Rwanda.
iii. To determine the influence of stakeholders' involvement on project performance in modern agriculture in Bramin Ltd Rwanda.

II. LITERATURE REVIEW

Technical expertise, training on the best agricultural practices, resource management skills, communication and motivation, organization and delegation, problem solving and decision making, as well as commercial awareness are all considered critical management skills in building and contributing to the development of agricultural projects, according to most studies (Lavison;2019) The level of education attained by heads of households has a considerable impact on modernizing food production via the use of technology, therefore increasing food supply (Wambugu;2016).

Critical factors and modern agriculture According to Austin and Tadele (2017), the poor performance of contemporary is due to challenges unique to Africa's physical and biological environment and people, such as poor soils, burdensome droughts and floods, labor deficiencies, under informed agriculturalists, outmoded farming techniques, and small scale farming methods.

Project performance in modern agriculture Modern agriculture, according to Austin and Tadele (2017), is underperforming due to challenges specific to Africa's physical and biological environment and people, such as poor soils, burdensome droughts and floods, inexperienced farmers, archaic farming techniques, and comparatively small farming methods.

Education for development, production credit, farmer group action, upgrading and increasing 12 agricultural land, and national planning for agriculture development are top five artilleries in agriculture modernization, according to Mignouna et al.,(2016). Access to finance can significantly boost the ability of developing countries to obtain agricultural supplies (Muzari et al., 2018).

In light of these patterns and forecasts, Rwanda will pursue new policies that will boost productivity growth for increased nutritional food production, as well as new possibilities for farm economic empowerment, in order to further reduce rural poverty and transform the predominate subsistence farming sector into a competitor and market driven agricultural industry.

In addition to this, monitoring and evaluation, management skills as well as stokeholds' involvement are also the critical factors that can lead to either poor or better agricultural project performance including the effective product costs, time management, project quality and sustainability and customer satisfaction regarding to how those critical factors are addressed (Ngwili et Al., 2015).

Levin (2015) carried out the study in America which was entitled the influence of project financial inclusion support on economic growth where the researcher carried out the research using interview guide questionnaires while collecting data as well as deceptive research design for data analysis and came up with findings showed how performance of modern agriculture influenced by knowledge and skills either agronomist or other people involved in agricultural projects gained from both schools and trainings and the researcher showed that agricultural training can boost new formation and economic development as well as modern agriculture.

This indicates that performance of economic project including project performance in modern agriculture can be influenced by some critical factors; this study will investigate the performance of agricultural project such as potato project as a result of resource based logic where agricultural critical factors are considered.

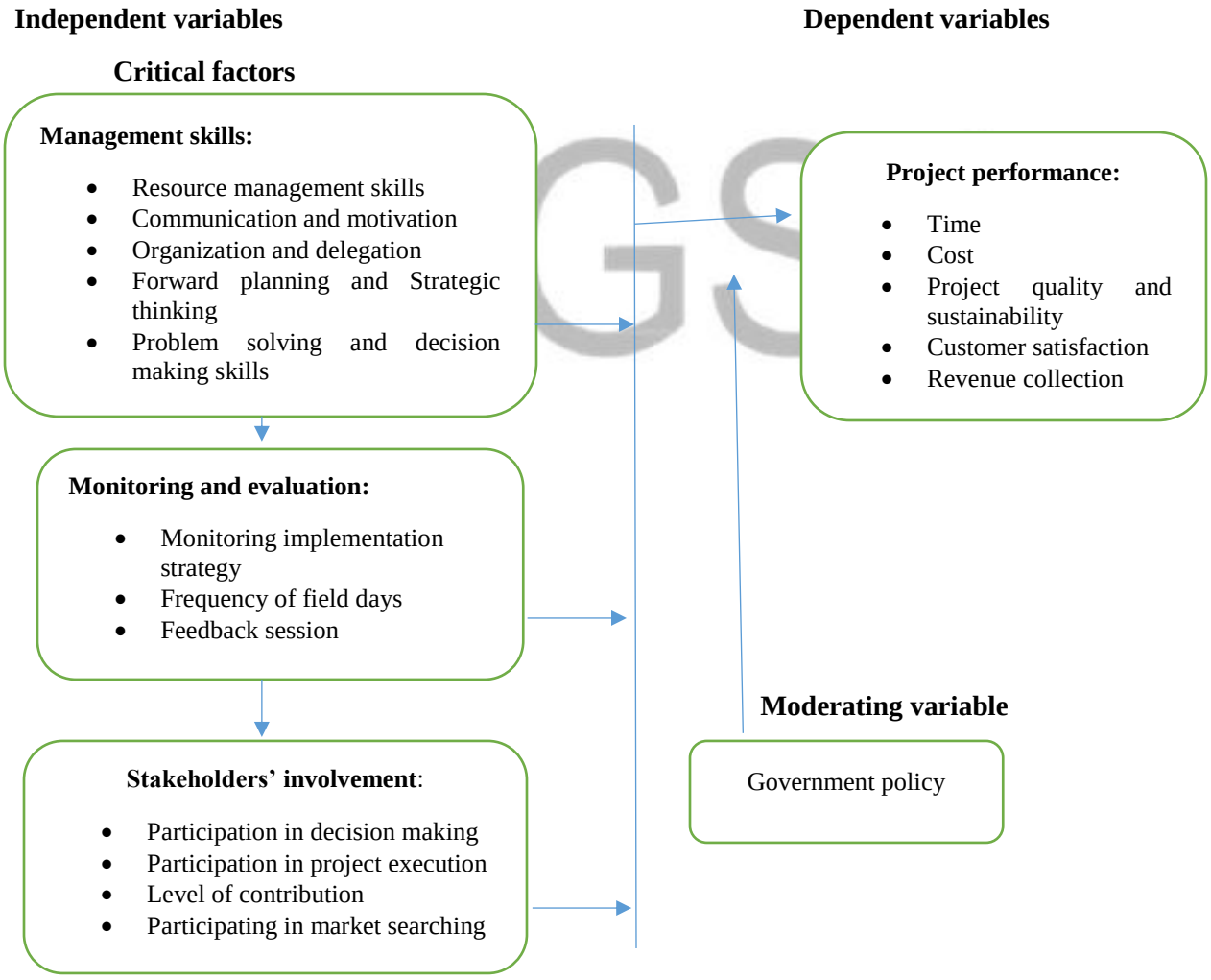

Figure 2.1 Conceptual framework (2021)

The conceptual framework in the Figure 2.1 shows how project performance in modern agriculture influenced by critical factors. Management skills (resource management skills, communication and motivation, organization and delegation onward planning and strategic thinking, problem solving and decision making as well as commercial consciousness), monitoring and evaluation (monitoring implementation strategy; frequency of field days and feedback session) and stakeholders 'involvement (participation in decision making, participation in project execution and level of contribution as well as participating in market searching) are considered as the indicators of critical factors which are independent variable while time; cost; project quality and sustainability as well as customer satisfaction are considered as indicators of project performance in modern agriculture which are independent variable. When agricultural projects have experts in management and monitors as well as evaluators carry out their work frequently; in the same way stakeholders involved in decision making; project execution as well as in market searching; agricultural projects start to improve their working by satisfying their customers; time management and fix effective cost as well improving project quality and sustainability.

III. MATERIALS AND METHODS

The population of the study was 100 including managers; agronomists; contract workers; and workshop team, while sample size was 80 respondents that were obtained by using Solvin's formula. Questionnaires and guided interview was used as data collection instruments where descriptive statistics was used for quantitative data analysis through the software of statistical product and service solutions (SPSS) version 21. Qualitative data were analyzed by using thematic method, Karl Pearson product moment correlation coefficient was used to establish the relationship between variables while regression analysis was used to check the influence of critical factors to project performance. Projects at 63.7 percent of R -square. Cronbach's alpha coefficient of 87.1 percent showed that the instruments were reliable while the validity was established by peer discussion with experts.

The sample size was calculated using Slovene's formula. Therefore, sample size is calculated by the Slovene's formula:

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

In this regards, n = sample size, N= population size, e= margin error (0.05), and 1 is the constant. 0.05% was utilized as the sampling the level of precision. This number of 5% is taken for making the correction of voluntary and/ or involuntary errors done by the respondents, Therefore, $n=\frac{N}{1+N(e^2)}$ so, $n=\frac{100}{1+100(0.05)^2}=80$

IV. RESULTS AND DISCUSSION

The influence of management skills on project performance in modern agriculture

The descriptive results for the management abilities variable are presented in this section. The respondents were asked to rate how much the agreed or disagreed with the statements about managerial skills. The following was scale that was used: SD denotes strong disagreement, D denotes disagreement, N denotes neutrality, A denotes agreement, and SA denotes strong agreement. The 4.3 summarizes the findings.

Tables 1: Perception of contract workers on management skills

Statements	SD		D		N		A		SA		Mean	std
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%		
Agricultural projects help agronomists in resource management skills	11	21.2	10	23.1	20	34.7	9	17.3	2	3.8	2.51	1.01
Customers are satisfied	15	28.8	11	21.2	10	19.2	12	23.1	4	7.7	2.28	1.19
This project provides skills in irrigation technologies	10	19.2	20	38.5	10	19.2	11	21.2	1	1.9	2.48	1.09
Agricultural products sold at effective cost	19	36.5	9	17.3	10	19.3	13	25	1	1.9	2.34	1.21
Provision of trainings on modern agriculture practices	11	21.2	12	23.1	18	34.6	1	1.9	10	19.2	2.75	1.35
This project improved their quality	1	1.9	8	15.4	3	5.7	21	40.4	19	36.3	4.05	1.10
In this project irrigation system is applied	5	9.5	2	3.8	2	3.8	20	38.5	24	44.3	4.46	0.69

Source: Primary data (2021). SD: Strongly disagree, D: disagree, N: Neutral, A: Agree and SA: Strongly agree.

Table 1 above shows the perception provided by contract workers related to the influence of management skills on project performance in modern agriculture ; where 82.8 percent of contract workers agreed that modern irrigation system is applied in modern agriculture at 4.46 of mean; 76.7 percent of contract workers agreed that project improved their quality at 4.05 of mean ,30.8 percent of contract

workers agreed that Customers are satisfied at 2.28 of mean; 26.9 percent of contract workers agreed that agricultural products sold at effective cost at 2.34 and 21.1 percent of contract workers agreed the provision of trainings on modern agriculture practices at 2.75 of mean, while 21.1 percent of contract workers agreed that agricultural projects help agronomists in resource management skills at 2.51 of mean.

According to the statistics in table 1, the irrigation system is the most commonly utilized in modern agriculture, as seen by the mean of 4.46. However, managers, agronomists, and workshop team members were given a guided interview about the impact of management skills on project performance in modern agriculture. The results showed that resource management skills, communication, and motivation, organization and delegation, onward planning and strategic thinking, as well as problem solving and decision making, lead to improve project performance. They also stated that such managerial abilities are ineffective due to a lack of capital and expertise.

The researcher made a comparative interpretation based on the perceptions of different respondents relate d to the influence of management skills on project performance in modern agriculture. As shown in table 4.3 as well as interviews given to managers, agronomists, and workshop team, respondents have similar i nsight on the influence of management skills yet different magnitudes.

Omache (2016) conducted research in Nyathuna Ward, Kiambu County, with the purpose of understandin g the factors that influence the production of agricultural projects.

Farm visits were discovered to be the farmers' preferred method of training; hence, this should be include d in agricultural programs.

Influence of monitoring and evaluation on project performance in modern agriculture

The descriptive results for monitoring and evaluation variable are presented in this section. The respondents were requested to designate whether they agreed or disagreed with the statements about technical needs. The following was the scale that was used: SD denotes strong disagreement, D denotes disagreement, N denotes neutrality A denotes agreement, and SA denotes strong agreement. Table 4.8 recapitulates the findings.

Table 2 Perception of contract workers on monitoring and evaluation

Statements	SD		D		N		A		SD		Mean	Std
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%		
Improvement of agricultural projects economy due to effective monitoring and evaluation	7	13.5	12	23.1	20	38.5	9	17.3	4	7.7	2.51	1.01
Frequency of field days improves the performance of agricultural projects at high level	2	3.8	11	21.2	10	19.2	12	23.1	17	32.7	2.28	1.19

Farmers who work in cooperatives show high level of improvement in their working	10	19.2	20	38.5	10	19.2	11	21.2	1	1.9	2.48	1.09
Feedback session is fruitful to this project	2	3.8	7	13.7	11	21.2	13	25	19	36.5	2.34	1.21
Quality and sustainability is influenced by monitoring implementation strategy	11	21.2	12	23.1	18	34.6	1	1.9	10	19.2	2.75	1.35

Source: Primary data (2021). SD: Strongly disagree, D: disagree, N: Neutral, A: Agree and SA: Strongly agree.

Table 2 above indicates the perception provided by contract workers related to the impact of monitoring and evaluation on project performance in modern agriculture; where 61.5 percent of contract workers agreed that Feedback session is fruitful to this project at 2.34 of mean; 55.8 percent of contract workers agreed that Frequency of field days improves the performance of agricultural projects at high level at 2.28 of mean ,25 percent of contract workers agreed that improvement of agricultural projects economy due to effective monitoring and evaluation at 2.51 of mean; 23.1 percent of contract workers agreed that Farmers who work in cooperatives show high level of improvement in their working.

at 2.48 and 21.1 percent of contract workers agreed that Quality and sustainability is influenced by monitoring implementation strategy at 2.75 of mean .According to the results shown in the table 4.8;it's clear that , Feedback session is fruitful to this project ; as shown by the at 2.34 of mean .However ;managers and agronomists as well as workshop team were given guided interview about the impact of monitoring and evaluation on project performance in modern agriculture ; indicated that monitoring implementation strategy, frequency of field days and feedback session lead to better performance of agricultural projects. They also added that, such monitoring implementation strategy is not effectively done due to insufficient preliminary study. The researcher made a comparative interpretation based on the perceptions of different respondents related to the impact of monitoring and evaluation on project performance in modern agriculture. As shown in table 4.8 as well as interviews given to managers, agronomists, and workshop team, respondents have the similar insight on the influence of monitoring and evaluation but diverse magnitudes.

Scott (2020) did a study to determine the extent to which agricultural projects are monitored and evaluate d, and found that agricultural projects may be improved since effective monitoring and evaluation can be done at any stage of the project. In addition to this, monitoring and evaluation considered as the crucial element that plays the important role in any project where the project with good monitoring show better performance when compared to those without.

Influence of stakeholders' involvement on project performance in modern agriculture

The descriptive results for the stakeholder involvement variable are presented in this section. The respondents were requested to show whether they agreed or disagreed with the statements about r isk assessment. The following was the scale that was used: SA denotes strong disagreement, D denotes disagreement, N denotes agreement, and SA denotes strong agreement.

Table 3 Perception of contract workers on influence of stakeholders' involvement

Statements	SD		D		N		A		SA		Mean	Std
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%		
Most projects like Bramin Limited Rwanda help stakeholders participating in decision making	5	9.6	20	38.5	10	19.2	10	19.2	7	13.5	2.88	1.23
This project ,farmers improve their project quality	9	17.3	4	7.7	15	28.8	17	32.7	7	13.5	3.17	1.27
Stakeholders participation in project execution help customers to be satisfied	12	23.1	25	48.1	10	19.2	4	7.7	1	1.9	2.17	0.94
Agricultural products found on time at effective cost	6	11.5	21	40.4	3	5.8	20	38.5	2	3.8	2.82	1.18
Stakeholders participate in market searching	4	7.7	4	7.7	2	3.8	20	38.5	22	43.3	4.34	0.83
Customers get agricultural products in time	1	1.9	2	3.8	4	7.7	23	43.3	24	44.3	4.42	0.69

Source: Primary data (2021). SD: Strongly disagree, D: disagree, N: Neutral, A: Agree and SA: Strongly Agree.

Table 3 above indicates the perception provided by beneficiaries related to the influence of stakeholders' involvement on project performance in modern agriculture; where 87.6 percent of contract workers agreed that Customers get agricultural products in time at 4.42 of mean; 81.8 percent of contract workers agreed that Stakeholders participate in market searching at 4.34 of mean, 46.2 percent of contract workers agreed

that this project, farmers improve their project quality. at 3.17 of mean; 42.3 percent of contract workers agreed that Agricultural products found on time at effective cost at 2.82 of mean and 32.7 percent of contract workers agreed that Most projects like Bramin Limited help stakeholders participating in decision making at 2.88 of mean as well as 9.6 percent of contract workers agreed that Stakeholders participation in project execution help customers to be satisfied at 2.17 of mean.

According to the findings indicated in the table 3; it is clear that, effective stakeholders' involvement improves project performance, as shown by the at 4.34 of mean. However; managers, agronomists as well as workshop team were given guided interview about the role of stakeholders' involvement on project performance in modern agriculture, indicated that allowing stakeholders in decision making leads to better performance of agricultural projects. They also added that, such stakeholders' involvement is not effectively done due to poor management. The researcher made a comparative interpretation based the perception of different respondents related to the influence of stakeholders 'involvement on project performance in modern agriculture. As shown in table 3 as well as interviews given to managers, agronomists, and workshop team, respondents have the similar perception on the influence of stakeholders' involvement but diverse magnitudes. According to Rangarajan committee (2018); released a report after conducting a research concerning stakeholders' involvement in whatever project and revealed that when stakeholders involved in decision-making leads to better performance of the given organization or project.

V. DISCUSSION

This study was entitled critical reasons for project performance in modern agriculture in Rwanda. This study aimed to examine the effect of critical factors on project performance in modern agriculture in Bramin Ltd. Thus, this general objective was achieved basing on three specific objectives which were to assess the impact of management skills on project performance in modern agriculture in Bramin Ltd, to evaluate the influence of monitoring and evaluation on project performance in modern agriculture in Bramin Ltd and to find the influence of stakeholders' involvement on project performance in modern agriculture in Bramin Ltd.

VI. CONCLUSION

The conclusion was drawn regarding the analysis of the findings presented in chapter four to answer the indicated research hypotheses, which were mentioned based on the three specific research objectives. The first research hypothesis presented in this study was that "management skills have a significant influence on project performance in modern agriculture at Bramin Ltd Rwanda." Because -value = 0.0115 is less than 0.05, we accept this hypothesis and conclude that management skills have a significant influence on project performance in modern agriculture at Bramin Ltd. The conclusion was also based on the study's second research hypothesis, which stated that "there is no significant influence of monitoring and evaluation on project performance in modern agriculture in Bramin Ltd." Because -value = 0.000 is less than 0.05, we reject the null hypothesis and conclude that monitoring and evaluation have a significant influence on project performance in modern agriculture at Bramin Ltd. Based on the study's third research hypothesis, "There is a significant link between stakeholders' involvement and project performance in modern agriculture in Bramin Ltd," -value =0.0145 is less than 0.05, so we accept this hypothesis and conclude that stakeholders' involvement has a significant influence on project performance in modern agriculture in Bramin Ltd.

VII. FUTURE RESEARCH

This study was done in modern agriculture in Bramin Ltd and it was based on critical factors responsible for project performance in modern agriculture. The researcher suggests that further research can be done to examine the influence of critical factors on development of agricultural projects in Rwanda so as to come up with comparative analysis.

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