Moderating Effect of Enterprise Environmental Factors on the Relationship Between Project Management Practices and Sustainability of Food Security Projects in Arid Lands, Kenya

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Abstract: **Although inclination with execution related to food projects in many regions has displayed substantial improvements, the tendency with sustainability is relatively unsatisfactory, as less projects shows continuity. Government has put measures by creating partnership to implement food security projects towards improving food access and security among communities in arid lands. However, some projects remain partially operational after the withdrawal of the main donor while others become defunct and variations from one county to another is noticeable. The difference in the levels of sustainability had been hypothesized to be attributed to enterprise environmental factors (EFFs). This study thus sought to examine the moderating effect of EEFs on the relationship between project management practices and the sustainability of food security projects in arid lands in Kenya. The study is anchored on contingency theory. Positivist philosophy is deemed appropriate for this study. Explanatory research design was adopted. The study targeted 413 food security projects implemented between the year 2014 and 2017 and within eight Counties in arid lands in Kenya with a sample of 203 food security projects. The respondents were 243, consisting of project group leaders, UN agencies representative and County government representatives. Stratified random sampling was used to obtain proportionate (obtained suing Slovin's Formula) samples from each of the eight Counties. Primary data was collected using self-administered questionnaire. Characteristics of the data was explained using means and standard deviation. Various diagnostic tests were carried out after which step-wise regression was applied to test the moderating effects. The results indicated that EEFs moderated the relationship between the project management practices and sustainability of food security projects. The study recommends that project leaders embrace various EEFs such as policies to improve the effects of project management practices on the performance of the food security projects.**

***Terms*: Project Management Practices, Enterprise Environmental Factors, Project Sustainability**

I. INTRODUCTION

Food security projects around the world play a vital role in eradicating hunger among vulnerable and poor communities around the world (Bilali, Callenius, Strassner & Probst, 2018). Food security projects generally aim at reducing the food crises and famines. Such projects are part of humanitarian actions which have doubled following the crisis caused by high levels of food insecurity in the year 2017 where more than one hundred and twenty-four million people across the country and its neighboring countries were affected (Food Security Information Network, 2018). Although a lot of food is produced globally, food insecurity problems still persist in most Countries (Bilali et. al., 2018). Therefore, there is a need to transit to sustainable food systems through sustainable food projects to reduce the sustainability challenges (FAO, IFAD & WFP, 2015).

According to FAO (2019) the complication in food systems would require an extra rounded and synchronized tactic in order to be sustained by considering the totality of the whole systems in terms of aspects, their relationships and their effects. They indicated that a sustainable food system should have three dimensions of environment, social and economic. In their report FAO, (2019) indicated waste, degradation, footprints from carbon and water and toxicity are some of environmental impacts. Inclusivity of gender, color or race, nondiscrimination, nurturing of cultural practices, care for community welfare and conscious of health, job creation and safety of labor as examples for social aspects; and food provision, food accessibility and affordability, income generated and tax revenue as examples for economic aspects. Food availability is the quantity of food present in a country or region through all forms of local production, imports, food stocks and aids and can be measured using food production index (FAO, IFAD & WFP, 2015). On the other hand, if one can access food either physically, economically, or social-culturally, then this indicates food accessibility. When food is physically inaccessible it means some part or region produces surplus food but cannot be taken to another part or region suffering from food inefficient due to for instance lack of transport. Food accessibility can be measured using consumer price index or percentage of population which get to be nourishment. The most common measure of economic

sustainability of food project is by looking at the level of accessibility. Sudha (2016) indicated that in general the trend of food accessibility is generally declining due to unsustainability of food project.

Sustainability of food projects has been a great challenge in various developing countries, Kenya included, where huge money and time is invested during implementation but expected impact is not realized (IFAD, 2020). Bilateral aid agencies report indicated that the trend for food project implementation indicate improvement, however, sustainability of the same is disappointing as very few projects are sustainable (IFAD, 2020). Additionally, sustainability of projects is realized when institutions and community around the project continue to benefit from outcome without the support from external source. This argument is supported by Kamau, Rambo and Mbugua (2021) indicating that due to low community participation, insufficient funding and support structures, food projects stall and their impact is not felt by the beneficiaries. Project management practices plays a vivacious role in guaranteeing projects have impacted on the intended beneficiaries (FAO, 2019). In order to achieve the objective of many modern businesses, integrate many functions in organizations, and achieve employee motivation, hence higher productivity, many businesses are increasingly becoming project oriented (Shir, 2011). However, demonstration of the value of the various applied project management practices has been illusive and even paradoxical. Kerzner (2017) concur by stating that the actual value resulting from investment in project management practices such as stakeholder involvement, monitoring and evaluation, capacity building and project leadership has been hard to define and measure.

Any project manager needs to use a wide range of project management practices so as to ensure projects are sustainably managed. These practices are categorized into distinct knowledge areas such as stakeholder involvement, management of the venture's risks, personnel, monitoring and evaluation, ways of communicating and building capacity (PMI, 2018). However, there are other available project management practices which have been mentioned to influence the project sustainability such as project leadership and capacity building approaches (Abudi, 2011). Kerzner (2017) indicated that project managers face challenges in applying the knowledge into practice either because one lacks enough experience in applying these knowledge areas or the training is not sufficient enough to give competence in their application. Kerzner (2017) ascertain that with deficiencies of whichever nature in application of the various project management practices relevant for a given undertaking can have a detrimental influence on the sustainably running the undertaking. Project phases brings about chronological phases through which project goes as well as development of the knowledge areas throughout the project (PMI, 2018). These areas bring about technical subject matter known as project management practices as stipulated by the project management professional and bring the project to life cycle and hence sustainability (Abudi, 2011). Sustainability of food security projects means producing enough food to maintain the human population while at the same time ensuring social welfare and reducing impact to the environment (Abudi, 2011). 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.

Enterprise Environmental Factors

According to PMI (2018) enterprise environmental factors (EEFs) refer to any environmental factors either internal or external to the project that can influence the project's success. Project management institute identifies EEFs to include culture, weather conditions, government regulations, political situation, marketing conditions, customs and so on. According to Kagwathii (2014) most communities have not been able to enjoy the intended projects benefits despites of the measures put in place to plan, implement, monitor and control projects by various stakeholders. He stipulates that most of the enterprise environmental factors which have significant influence include existing policies, community education levels, baseline skills in relation to project management strategies, community customs, core values and culture. Such characteristics steer the behavior of the community members hence their willingness and commitment to the activities geared towards project sustainability (Kagwathii, 2014). Salla (2014) indicated that EEFs may be internal or external to the organization and influence the project and may include company infrastructure, skills availability, risk attitude, governance approach, political and financial climate. Additionally, these factors affect the way projects are operating making projects unique in terms of how they can be sustainable since they are not under immediate control of the team. Thus, the factors can influence, constrain or direct the project, program or portfolio (PMI, 2018).

Project managers often face obstacles or problems during the projects execution majority of which they cannot be controlled and are known as enterprise environmental factors (PMI, 2018). Since these factors influence, constrain and alter the direction of the expected outcome, it is important that project managers are aware of them. For instance, as a project manager, you cannot affect the management of your company or management hierarchy of your company and therefore as you plan the project and apply various PMPs aimed at ensuring sustainability, you should get to understand the policies, culture and management structure of your company to avoid incompatibilities between the project and company itself or to avoid non-compliance with the existing policies. Additionally, in case of community in which the projects are implemented, a project manager should be aware of the existing farming practices and community core values device ways to deal with their influence on the projects. Otherwise, you may apply very good project management practices

proven to impact positively on projects sustainability but due to the farming practices which exist or the community values, the projects are not sustainable. Therefore, since enterprise environmental factors dictate the level of influence of PMPs to project sustainability, the research aims at establishing the control aspects of EEFs on association of PMPs and sustainable food security projects.

Arid lands have been characterized by reoccurring prolonged drought due to depredated ecosystem and unconducive climate for any form of farming (UNICEF, 2013). Approximately 89 percent of the Kenyan land is classified as Arid lands and approximately 36 percent of the population live in this land (Ministry of Planning and Devolution, 2016). Geographically, Arid lands in Kenya have eight Counties including: Turkana, Wajir, Garissa, Isiolo, Marsabet, Mandera, Samburu and Tana River (Ministry of Planning and Devolution report, 2016). Focus of the arid area was because it's the region mostly affected by food insecurity given their levels of aridity and vulnerability. Focus of the region was also as a result of increased implementation of food security projects in the region and yet they are not sustainable. Consequently, food security situation in Counties within arid lands has deteriorated.

Statement of the Problem

Food security projects are not sustainable in counties within arid lands despite the effort made by government and community-based organizations to implement numerous of the related projects. Community continues relying on the food for aid (FAO, 2019). Government efforts in terms of coming up with legal and institutional frameworks as well as various initiatives such as lowering fertilizer prizes, giving free seedlings, community empowerment through organizing agriculturally based trainings has not borne much outcome. Food security projects have been facing various challenges which have made them not sustainable (Abudi, 2011; FAO, 2019). According to FAO (2019) approximately 50 percent of the food projects in Kenya have brief life-span, slowed down, never affected the community and a few of them collapsed. IFAD report (2020) indicated that out of 45 food projects implemented by various CBOs and government of Kenya between year 2010 and 2015 only 15% are partly active and others are defunct and could not be traced after termination of the grant.

Previous studies (MacConvillec, 2017; Walters, Opong & Allgood, 2017; Rogito, Maitho and Nderitu, 2020) have sought the direct relationship between various factors and their influence on the project sustainability. Consequently, these studies have failed to consider that the sustainability of the project would defer from one County to another due to different environments or context in which they have been implemented. The success of any project can be influenced by the managers' ability to control the operating environment. The study therefore, not only look at direct relationships between study main variables but also moderating influence of EEFs.

Objectives of the Study

The purpose of this study was to determine the moderating effect of EEFs on association between PMPs and food security projects sustainability within Kenyan arid lands.

Research Hypothesis

H_0: EEFs does not significantly moderate the relationship between PMPs and sustainability of food security projects in Kenyan arid lands.

Scope and Limitation of the Study

The study focused on the moderating effect of EEFs on the relationship between project management practices and sustainability of food security projects within eight Counties in arid lands in Kenya. The study targeted 413 food security projects supported by County government in collaboration with various agencies in 8 Counties within arid lands in Kenya implemented between the year 2014 and 2017. The study took place between January and April, 2022. Individuals selected were unwilling to participate in the study due to fear of victimization and due to confidentiality of the information. However, research authorization and NACOSTI letter was provided to the respondents as a way of confirming the study was intended for scholarly work. Some of the questionnaires were not returned but follow up was made to increase percentage of response rate. There was a challenge of language barrier which was countered by use of local research assistance for interpretation.

II. LITERATURE REVIEW

Theoretical Review

This study is underpinned by Contingency Theory by Fred Fiedler (1964). Fundamentally the theory is grounded on the premise that the result an undertaking is determined by the prevailing situation. The context in which the firm operates at a particular time determine the level of its success hence the need to borrow from the theory. According to Fiedler (1964), no project is fully studied without considering the context hence the need to consider not only the resources, leadership, capacities but also the enterprise environmental factors as a moderating variable in defining the project sustainability. Surroundings of a given project establish their sustainability at particular time. In this regard, contingency theory informed the research variable Enterprise environmental factors hence the formulation of hypothesis, *H_0: EEFs does not significantly moderate the association between PMPs and sustainability of food security projects in arid lands, Kenya.* Opponents of Contingency theory such as Hanisch and Wald (2012) indicated some challenges associated with the theory such as having loose and incoherent definitions of contingency factors. They added that this theory also has a limitation of its inability to analyze multitude of influencing factors affecting a particular outcome hence the need to substitute the theory

with other relevant theories since this study deals with multiple factors. Hanisch and Wald (2012) stated that contingency theory is barely connected venture administration, findings which are consistence with Hanisch and Wald recommendations.

Despite the critiques put against contingency theory, the present study was anchored on it since the study is based on project which are characterized as unique. The sustainability of any project is affected by different factors which largely depends on the circumstantial condition. Projects are temporary undertaking meant to achieve a given goal and food security projects are implemented in many counties within arid lands and their sustainability defers from one county to another. In an effort to develop the theory, Fiedler (1964) indicated that projects face different and unique challenges which are brought about by the environment in which they are executed. Therefore, it is essential to ponder the project setting if its sustainability is to be realized hence the value of contingency theory. The theory is significant in this study since it outlines technical, behavioral and contextual competencies essential to projects dealing with food security so as ensure economic, communal and environmental sustainability is met.

Empirical Review

Donor standards give the minimum requirements of the funded groups running food security projects which undermine not only their sustainability but also their accountability. Tight regulations regarding the donor's finances prevent them from providing funds to improve projects institutional systems of accountability (Kerzner, 2017). The study added that there is often no consensus among the donors and projects to address the need for balancing the accountability issues and sustainability of the projects. These often create tension between project competing priorities which lead to negligence of key project activities like monitoring and evaluation, project funding and capacity building ability and consequently affecting the sustainability of the ventures.

A study conducted at Msunduza Dry Sanitation Projects by Salla (2014) roles played by EEFs on project sustainability among development cooperation. The study found that community norms and culture and prior knowledge on undertaking are the main contextual factors which alter the influence of various measures put to ensure project sustainability followed by the prior knowledge possessed by the community on a similar undertaking. The study concluded that projects operate in different environment and this present the uniqueness in projects unlike other operations in an organization. Projects could be similar in terms of the resources allocated, the stakeholders involved and similar planning and implementation strategies. However, the operating environment of each project would greatly influence the level of the success and sustainability of such projects. To deal with subjectivity nature of qualitative data analysis and to validate the results the current study will use both qualitative and quantifiable investigation. Additionally, since current survey targeted projects which are located in various Counties and which are characterized by diverse culture and norms, the study will investigate if culture and norms of community as well as existing farming influenced the effects that PMP would have on project sustainability.

Oregon (2011) indicated that project environment which influences sustainability of projects include legislation, policies and political influence. They added that the efficiency of intermediate level actors such as private sectors, non-governmental organizations, government and availability of the resources are of important to sustainability. Policies and regulations for donor agencies are vital in sustainability of their funded projects. This is more applicable especially when the donor organization operates across national borders since the accountability and transparency has to be clear (Kagwathii, 2014). Therefore, the policies and regulations have to be clear in order to govern the operations and to ensure sustainability. Today, the Government of Kenya agrees that proper policies in relation to land usage for agricultural interventions are vital for realization of fiscal development, deficiency decrease, gender fairness, social growth as well as sustainable development (GoK, 2010).

Conceptual Framework

Conceptual framework shows the connection between the moderating variable (EEFs) which influence the association between PMP and sustainability of the project.

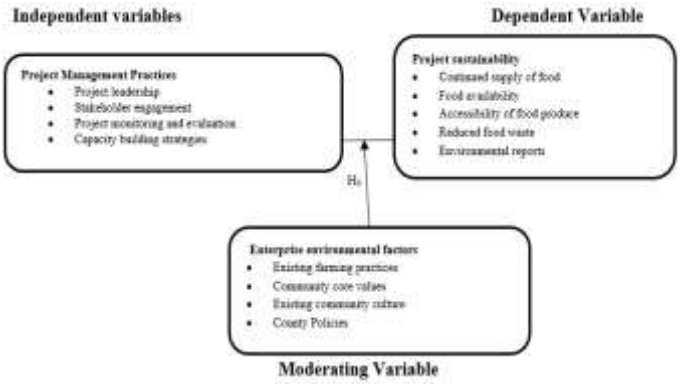

Figure 1: Conceptual Framework

III. METHODOLOGY

Explanatory research design is selected because it connects ideas to understand causation since the researcher was interested in explaining the relationship among the study variables. Research philosophies adopted was positivism as it helps investigation of a phenomenon in an objective approach (Harvey, 2007). According to Sekaran and Bougie (2010) positivism take the scientific approach in employing empirical models to determine a given outcomes using various causes for the same. Descriptive statistics including mean and standard deviation was computed to explain characteristics of distribution. Factor analysis was done to condense many

factors under each variable into few key factors for each variable. This led to performing of Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. The decision rule was that for KMO values greater or equal to 0.7 it indicated adequacy of the sampling. The Multiple regression models are characterized by the Ordinary Least Square (OLS) assumption since they involve parametric test (Gujarati & Sangeetha, 2007). Thus, various diagnostics tests to ascertain that the OLS assumptions have not been violated was carried out. Gujarati and Sangeetha (2007) stated that when assumptions are violated, accuracy and inferences from the analysis are also affected. This included the test for normality, multicollinearity and heteroscedasticity.

The moderator variable can alter the strength and /or direction of any direct relationship (Hayes, 2018). The study applied Sobel-Goodman moderation test by regressing the food security projects sustainability on the composite index of the project management practices.

To determine significance of the coefficient of interaction of the study independent variables, moderating variable and dependent variable we used model 1:

$$Y = \beta_0 + \beta_1 PMP + \beta_2 M_1 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where:

Y = Composite index for Sustainability of Food Projects

PMP = Composite index for project management practices

M_1 = Composite index of indicators of enterprise environmental factors

β_0 = Constant

β_1 & β_2 = Beta Coefficients

ε = Stochastic error terms

Introducing the enterprise environmental factors (M_1) into model 1 assist to test if its statistically significant by checking if it satisfies the first explanatory condition by having its coefficient significant (Hayes, 2018).

To establish the direction and effect of the moderator on the predictor variables and its cumulative effect on project sustainability, model 2 was used as follows:

$$Y = \beta_0 + \beta_3 PMP + \beta_4 M_1 + \beta_5 (PMP \times M_1) + \varepsilon \ldots\ldots\ldots 2$$

Where:

PMP × M_1 = product of project management practices and enterprise environmental factors (the interaction term)

B_3, β_4, β_5 = Beta coefficient

ε = Stochastic error terms

The decision criteria for the moderation were that if the p-value for interaction term is statistically significant ($p < 0.05$), then the hypothesis, enterprise environmental factors is not a moderator variable would be rejected and the conclusion would be that the enterprise environmental factors have a moderating effect. In the event that the interaction impact between the independent variable and mediator is not factually noteworthy, at that point EEFs does not have a directing impact. The unit of analysis was food security projects in eight Counties within Arid Lands in Kenya which are registered under National Drought Management Authority (NDMA) and which were implemented between year 2014 and 2017. Kenya Resilience Investment Tracker (2018) from NDMA indicate 413 food security projects implemented by various UN agencies in partnership with the government of Kenya and distributed within the eight Counties in arid lands in Kenya. Sample size was 203 and was selected using Slovin's formula was used to sample the respondents for the current study (Ariola, 2006) as it allows sample to be selected at a given desired level of accuracy indicated by the level of significant (Hayes, 2018). The study respondents were 243 composed of: 203 project group leaders, head of the field officers from FAO, FH-Kenya, WFP, Concern Worldwide Kenya offices in the eight Counties within arid lands (32) and County government officer in charge of food/ agricultural projects in each of the eight Counties in arid land (8). The questionnaire was used because it guaranteed high response rate, allows data collection from large population and also allows for the collection of views, opinions and perception from the respondents on the issues being investigated (Mugenda & Gitau, 2020). The questionnaire contained both open ended and closed ended questions, which enabled coding of responses easier and also give respondents' chance to give their opinion (Gall & Borg, 2007). Hayes (2018) indicated that the sample size for pilot study can be 5-10 percent of the main survey. For this study piloting was carried out in food security projects in Kitui County which is in semi-arid lands using 45 food security projects which forms 10 percent of the target population. Validity indicates 'appropriateness' of the procedures used, tools employed and the information obtained. Face validity was assessed by considering how suitable the contents of a test is on the surface. In this case subjective assessment of the questionnaire appearance in terms of readability and feasibility. Content validity was ensured by subjecting questionnaire to my supervisors as well as my fellow students so as to evaluate if each question in the questionnaire is crucial and useful to achieving the study objectives. Construct validity was measured by dividing the questionnaire into various sections guided by the study specific objectives or variables and also to guarantee same closely ties to the study conceptual framework.

Since most of the questions in the questionnaire are Likert scale, Cronbach alpha method was used for this study. Cronbach Alpha is a measure of internal consistency and gives idea on how closely set of items in a given group are related. The data obtained from the piloting were used to test the reliability. Reliability coefficient close to zero indicates that the test scores are unreliable and a higher coefficient indicates more reliable or accurate the test scores (Hayes, 2018). He added that for Cronbach alpha coefficient of values

equal or above 0.7 indicate there is consistency while values under 0.7 signifies that the research instrument lack of reliability. A training session was held between the researcher and the research assistants where the assistants were taken through the questionnaire in order to clarify any question which might not be clear and to brief on the areas where data was collected as well as clarity on respondents and other logistics. Ethical considerations included informed consent where respondents were made aware of what the study. they were informed that the participation was on voluntary basis. The information provided was kept with confidentiality to avoid revealing of the personal information for the respondents.

IV. RESEARCH FINDINGS AND DISCUSSIONS

The response rate was 79 percent as 192 questionnaires out of 203 were fully filled and returned and this was considered adequate for analysis, conclusion and to offer recommendations. Saunders et.al., (2009) indicated that a response rate of 50 percent is good for academic studies while a response of 70 percent is very good. Results for Cronbach's Alpha shows project management practices had a value of 0.818, enterprise environmental factors recorded 0.761 and project sustainability recorded 0.894. All the study variables had an alpha value greater that 0.7 indicating a reliability of the research instrument. The results agree with Gujarati & Sangeetha (2007) who indicated that a reliability of 0.7 and above is considered fit. Kaiser-Meyer-Olkin (KMO) was conducted in order to confirm the adequacy of the sampling. The thumb of rule is KMO equal or greater than 0.7 it indicates adequacy of sampling. The gave the results for KMO values for enterprise environmental factors of 0.706 and project sustainability KMO value of 0.871. since these values are more than 0.7 it shows that the sampling was adequacy.

On background information most participants had university-level education, followed by secondary-level education then primary-level education. However, some did not have formal education. This is an indicator that the respondents were literate and capable of interpreting and answering the questions posed in the questionnaire accurately. Majority of the respondents had worked for between 3 and 5 years, followed by those who had worked for between 5 and 7 years and then who had worked for 3 years and below years. The results indicate that the respondents had worked in their projects for some sufficient time to make them aware of the issues affecting project sustainability.

Descriptive Analysis

The respondents disagreed that county lands policies have promoted food project by protecting the grabbing of communal ($\bar{x}$ = 2.38; s = 1.26); that county land policies have promoted food project by giving access to communal lands ($\bar{x}$ = 2.21; s = 1.313) and that government provide regular information from metrological department to alert farmers on weather conditions ($\bar{x}$ = 2.85; s = 1.198). The aggregate mean score and standard deviation for enterprise environmental factors is 2.48 and 1.257 respectively. The aggregate mean score of 2.48 on a five-point Likert scale obtained in this study implies that the respondents felt that the local community, project sponsors and County government in counties within arid lands has not done much to in embracing various enterprise environment factors to enable project management practices to influence on sustainability of food security projects. These findings are in agreement with Salla (2014) who recommended that understanding and embracing enablers withing which the projects are implemented would help put in place best practices which maximizes the probability of successful project outcomes.

On various items related to project sustainability the respondents gave their levels of agreement or disagreement. After analyzing using means and standard deviation, the results indicated that to a great extent respondent greatly agreed that financial reports in relation to project are prepared by group leaders ($\bar{x}$ = 3.71; x = 1.017); and there is increased food safety among the community members ($\bar{x}$ = 3.65; s = 1.017). The respondents to a moderate extent agreed that there is reduced food wastes ($\bar{x}$ = 3.46; s = 1106); there is increased food supply from the project ($\bar{x}$ = 3.38; s = 1.17) and that community members can now identify community members with food insecurity ($\bar{x}$ = 3.21; s = 1.148). Respondents to a low extent agreed that more community population can get access to sufficient food ($\bar{x}$ =2.41; s = 1.125); public within the county can now access food throughput the year ($\bar{x}$ = 2.29; s = 1.188); there is increased availability of food to the locals ($\bar{x}$ = 2.49; s = 1.18); project groups formed during project planning have maintained their operations ($\bar{x}$ = 2.16; s = 1.373) and food produce are now affordable throughout the year ($\bar{x}$ = 2.97; and s = 1.276). Overall, the aggregate mean score and standard deviation for sustainability of food security projects is 3.0275 and 1.1695 respectively. This implies that the respondents agreed that food security projects are sustainable. The findings are in agrees with FAO report of (2019) which indicated that sustainability of any projects emphasizes on the level of achievement of economic, social and environment aspects most of which have been considered in this study.

Factor Analysis

Factor analysis was carried in the study, in order to check out any correlated variables for redundancy in data to be reduced. Factor analysis was done by subjecting the statements to dimension reduction in SPSS using principal axis factoring and varimax rotation to help in data reduction and identify latent variable items that best explain a given variable. During this process coefficients with absolute value below 0.3 were suppressed, this yield to only those items with high significance and influence in variable formation. Gujarati & Sangeetha (2007) suggested that during factor analysis coefficients with absolute value below 0.3 should be suppressed, this yield to only those items with high significance and influence in variable formation. The extraction of the factors followed the Kaiser Criterion where

an eigen value of 1 or more was deemed to indicate a unique factor.

Total Variance analysis indicates that the four (4) statements on enterprise environmental factors can be factored into 1 factor as shown in table 1.

Table 1: Enterprise Environmental Factors Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.122	53.049	53.049	2.122	53.049	53.049
2	.907	22.665	75.714			
3	.561	14.023	89.737			
4	.411	10.263	100.000			
Extraction Method: Principal Axis Factoring						

Factor Analysis for Sustainability of Food Projects

Total Variance analysis indicates that the twelve (12) statements on project leadership can be factored into 1 factor as shown in table 2.

Table 2: Sustainability of Food Projects Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.238	43.650	43.650	5.238	43.650	43.650
2	1.277	10.642	54.292			
3	.916	7.637	61.929			
4	.863	7.189	69.118			
5	.758	6.319	75.437			
6	.618	5.146	80.583			
7	.551	4.590	85.173			
8	.475	3.960	89.133			
9	.431	3.593	92.726			
10	.361	3.009	95.735			
11	.261	2.172	97.908			
12	.251	2.092	100.000			
Extraction Method: Principal Axis Factoring						

Results of Diagnostic Tests

Normality test was done using Kolmogorov-Smirnov Test. The decision rule was if the p-value (Sig.) is less than the test significance level which is 0.05 for this study, then the hypothesis that the observed distribution is normally distribution is rejected and the study concludes the distribution is not normally distributed, and vice versa. The results indicated that all the variables were normally distributed since the p-values obtained were greater than 0.5 obtained, that is, enterprise environmental factors (0.053 > 0.05) and sustainability of food security projects (0.200 > 0.05).

Since this study involved multiple factors, multicollinearity test was carried out to determine if there are some independent variables which are highly correlated so as to avoid problems in regression analysis. Variance Inflation Factors (VIF) and tolerances were used to test multicollinearity and the criteria used was that if the values of tolerances are less than 0.1 or values of VIF are greater than 10, it indicated presence of multicollinearity and vice versa. The results obtained indicated that enterprise environmental factors had VIF=1.46 and Tolerance = 0.685. From the results it can be ruled out the possibility of multicollinearity and hence the level of multicollinearity in the model could be tolerated.

Levene test used in this study was used to test hypothesis that the error variances are all identical (homoscedasticity). The results indicated that enterprise environmental factors had Levene Statistics of 1.240 with a p- value of 0.231. The hypothesis that the error variances are all identical was not rejected since the p-values were higher than 0.05, hence concluding that there was no heteroscedasticity in the data and are fit for conducting inferential statistics.

Moderating Effect Results

The study objective sought to determine the moderating effect of enterprise environmental factor on the association between project management practices and sustainability of food security projects in Counties within arid lands in Kenya. The null hypothesis (H_0) was tested at 5% level of significance. The null hypothesis was derived as:

H_0: Enterprise environmental factors does not significantly moderate the association between project management practices and sustainability of food security projects in Kenyan arid lands.

Test of hypothesis was done using step-wise multiple regressions where the first step involved the estimation of model 1 as the base model to establish the relationship between the independent and dependent variables as presented in the regression output for the test of hypothesis one to four. The model was restated as follows:

$$Project\ Sustainability = \beta_0 + \beta_5 PMP + \beta_6 EEF + \varepsilon$$

Secondly, model 2 as was used to estimate the moderating effect when the interaction terms is considered. The summary of the model is as given in table 3.

Table 3: Model Summary for Enterprise Environmental Factors									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df_1	df_2	Sig. F Change
1	.657[a]	.432	.423	.51475	.432	47.677	3	188	.000
a. Predictors: (Constant), Interaction term, project management practices, Enterprise environmental									

Research findings in table 3 indicate that the adjusted R-Squared was 0.423 with a standard error of estimate being 0.51475, meaning that the model explain 42.3 percent of the variations in the sustainability of food security projects while the rest are explained by other variables not included in the model. The results agree with the findings from Salla (2014) study which indicated that projects may be similar in terms of resources allocated, stakeholders involved with similar strategies being applied but their unique operating environments may dictate if the projects will be sustainable or not.

Table 4: ANOVA[a] Results for Enterprise Environmental Factors						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.898	3	12.633	47.677	.000[b]
	Residual	49.814	188	.265		
	Total	87.713	191			
a. Dependent Variable: sustainability of food security projects						
b. Predictors: (Constant), Interaction term, project management practices, Enterprise environmental						

The Analysis of Variance (ANOVA) results given in table 4 gives the F statistics of 47.677 with a corresponding p value of 0.000 which implies that the regression model is significant ($P < 0.05$).

Table 5: Coefficients[a] for Project Management Practices, Enterprise Environmental Factors and Interactive Terms							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.796	.822	.541	.968	.334	-.826	2.419
project management practices	.333	.218	.281	1.523	.129	-.098	.764
Enterprise environmental	.384	.278	.425	1.382	.169	-.164	.933
Interaction term	.007	.070	.040	.094	.925	-.132	.145
a. Dependent Variable: sustainability of food security projects							

The model which was to determine the effect of the moderator on the predictor variable and its commutative effect on the project sustainability can be stated as:

*Project sustainability = 0.541 + 0.281 PMP + 0.425 EEF + 0.040 (PMP*EEF)*

Research findings in table 5 shows the value of the coefficients of project management practices is 0.281 with a p-value of 0.129; enterprise environment factors coefficient was 0.425 with p-value of 0.169; and the coefficient of interaction term consisting of the product of project management practices and enterprise environmental factors was 0.040 with a p-value of 0.925. The decision criterion was that if the p-value for the interaction term is statistically significant ($p < 0.05$), then the hypothesis that enterprise environmental factors is not a moderator variable will be rejected and the conclusion will be that the enterprise environmental factors have a moderating effect. On the other hand, if the interaction effect between the independent variable and the moderator is not statistically significant, then the enterprise environmental factors does not have moderating effects.

From the results the interaction term has p-value of 0.925 which is a ($p > 0.05$). Based on the moderation rule by Mackinnon et. al., (2007), the study therefore, do not reject the null hypothesis that enterprise environmental factors do not have a moderating effect on the relationship between project management practices and sustainability of food security projects. This means that enterprise environmental

factors have NO moderating effect on the relationship between project management practices and sustainability of food security projects in Counties within arid lands in Kenya. The argument of including EEFs as a moderating variable was based on past studies which supported EEFs as a moderator of various PMPs and project sustainability (Kagwathii, 2014; Salla, 2014) and PMI (2018) which indicate that EEFs presenting unique environments which can alter project performance hence sustainability. Additionally, it was supported by Contingency theory (Fiedler, 1964) which indicated that the context in which the firm (project) operates at a particular time determine the level of its success.

V. CONCLUSSION AND RECOMMENDATIONS

The study sought the moderating effect of the enterprise environmental factors on the relationship between the project management practices on the sustainability of food security projects in Counties within arid lands in Kenya. On the basis of the objective which sought to determine the moderating effect of enterprise environmental factors on the relationship between project management practices and sustainability of food security projects in Counties within arid lands in Kenya, the study concluded that enterprise environment factors have no moderating effect on the relationship between project management practices and sustainability of food security projects. The expectations were that since projects considered are distributed in eight Counties which are geographically located across the country and ethnic groups who have different cultures and core values as well as regions which have different farming practices are exercised, then influence of project management practices on project sustainability would defer. However, it can be concluded that enterprise environmental factors do not influence the relations and the explanation could be although these environments where projects are located are geographically different with diverse cultures as well as the values, they do not influence the relationship between project management practices and sustainability of food security project because they are all arid lands.

The current study contributes to this knowledge by not only looking at direct relationship but also including the moderating effects of enterprise environment factors on the relationship between project management practices and sustainability of food security projects. In doing so, the study support situation theory considered in this study which stipulates that the success of the undertakings may defer depending on the environment in which it is implemented. This study found that the level of project sustainability was determined by the County's agriculture and partnership policies, culture, farming practices and regulations in which it is implemented as indicated by strong correlation although the effect was not significant.

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