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# Factors Influencing Project Sustainability of National Accelerated Agricultural Inputs Access Programme in Kanduyi Sub-County, Kenya

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## Abstract

The trend indicates that development through project concept is the preferred mode of addressing development needs. However, project failure is often reported, with over 50% of projects implemented in sub-Saharan Africa failing even after successful implementation. Project sustainability failure has been attributed to inadequate; stakeholder participation, project monitoring, project communication and stakeholder empowerment. Similarly in Kenya, despite continued implementation of food security projects in Bungoma County, over 74% of households remain food insecure. NAAIAP is one of the efforts by the government to improve food security among resource poor famers in Bungoma. But it was not clear whether NAAIAP implementation was sustainable or followed similar trends of past food security projects. Past studies on NAAIAP had not addressed the sustainability of the programme in Bungoma. There was need therefore to determine the factors that influence NAAIAP sustainability in Bungoma County. A descriptive study design was utilized.. The study was conducted in Kanduyi sub-county which was reported to have persistently high food deficit and low production per hectare. The target population of the study was 4,011 NAAIAP smallholder farmers. A sample of 182 beneficiaries was obtained using Cochran's sample size formula for continuous data. Systematic random sampling was used to draw respondents. The data was collected using structured questionnaire. The questionnaire was validated by experts from JKUAT. The reliability of the instrument was tested using the Cronbach's Apha coefficient. A reliability coefficient of 0.831 was obtained, which was considered appropriate for the study. A pilot testing of the research instruments was conducted in Namasanda ward in Kanduyi sub-county. The questionnaires were administered to the respondents through face to face delivery. Descriptive and inferential statistical tests were used in the analysis. The descriptive statistical tests used in the analysis were percentages and arithmetic mean for central tendency among

variables. Inferential statistical tests used were chi-square test of agreement, pearson's product moment correlation coefficient and multiple regression model. The analysed data was presented in tables and charts. The study findings from the prediction model indicated that the value of project sustainability under the current study would be expected to have a positive value of 1.2350 if the values of the predictor variables were zero. Stakeholder empowerment was noted to strongly influence the mean change in project sustainability in the prediction model. All variables in the study showed a positive mean change on project sustainability except for project monitoring which had a negative influence. The value of sustainability of the project in the prediction model was observed to have a mean change of; 0.178 for stakeholder participation, -0.0058 for project monitoring, 0.101 for project communication and 0.42 for stakeholder empowerment, for every positive unit change in the independent variables as mentioned. It is anticipated that the information from the study will enhance sensitization to community development policy makers, project implementing agencies and project beneficiaries on the significance of stakeholders' participation, project monitoring, project communication and stakeholder empowerment in sustaining project long-term impacts. As a strategy to ensure inclusion of sustainability promoting actors in project organization and developing sustainability competencies' strategies, to promote project sustainability goals.

**Keywords:** *Stakeholders' Participation, Project Monitoring, Project Communication, Stakeholder Empowerment and Project Sustainability.*

## **1.0 INTRODUCTION**

Projects as a mode of development have gained popularity in the recent past, (Ika, 2009; Hyväri, 2006; Diallo & Thuillier, 2005), the continued use of the concept is due to consideration that projects are objective and specific in addressing development needs. Despite this, project sustainability has been a challenge and a concern to development agencies, (Oino *et al.*, 2015; Whittington, Prokopy, Komives, Thorsten, Lukac, Bakalian, & Wakeman, 2009; Savaya, Robinson & Torvik, 2005). According to Savaya *et al.*, (2008), over 40% of implemented projects in developing regions of the world fail to sustain the long-term benefits over their lifespan after withdrawal of support. The study therefore focused on assessing factors that ensure inclusion of sustainability promoting actors in project organization and developing sustainability competencies' strategies, to promote project sustainability goals (Aarseth, Ahola, Aaltonen, Okland, & Andersen, 2017).

A study conducted in India by Kumar and Best, (2006), on E-Government service project noted that the project failed a year later after successful implementation. The study findings pointed to inadequate empowerment of local people, stakeholder participation and inadequate monitoring as the main causes of failure. Similarly, Nelson, (2007), in his study of IT projects in the United Kingdom and United States of America illustrates that continued failure of projects is attributed to the same mistakes of inadequate involvement of users and capacity to use the installed systems. Nevertheless, sustaining outcome over the lifespan of a project is significantly emerging as critical in attaining the essence of development projects, (Marks & Davis, 2012; Lockwood, Bakalian, & Wakeman, 2003).

The trend is more worrying in Africa, Ika (2012), asserts that project sustainability failure in sub-Saharan region is higher than other developing regions of the world at 50%. Yet the countries within the region remain plagued by challenges related to underdevelopment,

(Madavo, 2005). This is demonstrated by Nederlof and Dangbegnon, (2007), in a case of Integrated Soil Fertility Project that was aimed at improving the livelihood of resource poor farmers through improving soil fertility and improved crop production in central Togo. Although the project was successfully implemented, targeted farmers failed to adopt the improved soil fertility technology due to inadequate involvement of all social groups in decision-making process and use of monitoring criteria that differed in meaning to implementers and beneficiaries. Likewise Van Averbek, Denison, and Mkeni, (2011), while reviewing smallholder irrigation projects in South Africa realized that out of the 302 schemes, more than 90 were not functional in 2010 pointing mainly to inadequate human capacity.

The trend seems to be similar from a local perspective context as indicated in the World Bank report, (2011), on financing of small piped water systems in rural and peri-urban Kenya, highlights the significance of stakeholder participation, capacity building and project monitoring. According to the report, community water projects for example Kiamumbi water project in Kiambu County was successfully implemented under Maji ni Maisha project. The success was due to community participation through contribution of 20% of initial project cost, capacity building among project management team, project monitoring and the willingness to pay for the water services by the beneficiaries to ensure sustainability.

However, the Tana-Delta Irrigation Project (TDIP) in Tana River County, on the other hand is another case of failed projects in Kenya as asserted by Lebrun, Hamerlyneck, Duvail, and Nyunja, (2010). The study findings in contrast to Kiamumbi project in Kiambu, noted inadequate community participation at conceptual, implementation and operation phases of the project. Literature review seems to indicate a link between project sustainability and stakeholder participation, project monitoring, project communication and stakeholder empowerment. There is an urgent need therefore to review the factors that influence project sustainability for better understanding of the link, if project sustainability failure in Kenya is to be improved.

An investigation in participation and sustainability of community water supply projects by Marks, Komives, and Davis, (2014), indicates a positive association between the level of participation and hand pump sustainability in Ghana. The study findings in addition noted better project outcomes among communities which participated in management-related decision-making. In this study, the level of participation, participation in decision-making and inclusiveness of social groups were the indicators of stakeholder participation. Information generated from monitoring is critical in decision making and enhancing the learning process. However the effectiveness of the information is influenced by the process applied in collection of monitoring data (Cundill & Fabricious, 2009; Field, O'connor, Tyre, & Possingham, 2007; Stem, Margoluis, Satafsky, & Brown, 2005). The criteria used in a monitoring system too influences the sustainability of the system after withdrawal of support, determining achievement of intended objectives and informing decisions (Garcia and Lescuyer, 2008; Douvère & Ehler, 2011; Lyons, Runge, Laskowski, & Kendall, 2008), respectively. Availability of timely information for decision making on the other hand is dependent on the frequency of monitoring (IFAD, 2009). The study adopted, process, criteria and frequency of monitoring as indicators of project monitoring.

The level of communication is associated with interpersonal relationship, exchange of information and facilitates involvement in decision making (Rutten, Augustson, & Wanke, 2006). Patrashkova-Volzdoska, McComb, Green, and Dale, (2003), while examining a curvilinear relationship between communication frequency and team performance in cross-functional project team, noted the existence of a positive relationship between frequency of communication and performance. Therefore in this research study, the level, media and frequency of communication were considered indicators of project communication. According to Kasmel and Andersen, (2011), the presence of empowerment programme on a project, participation of stakeholders in the training and transfer of knowledge is significant. Sonagachi project in Culcuta India is a case in point where Jana, Basu, Rotheram-Borus, Mary, & Newman, (2004), shows that the project had empowerment components and some sex workers accepted to participate in the training. The presence of empowerment programme on a project, participation of stakeholders in the training and the transfer or application of the acquired skills was the indicators of stakeholder empowerment under this study.

Project sustainability is significant if the long term impacts of a project to beneficiaries are to be attained. Davis, Lukacs, Jeuland, Alvestegui, Soto, Liza'rraga, Bakalian, & Wakeman, (2008), in an investigation of sustaining the benefits of rural water supply investment in Bolivia revealed a positive association between user satisfaction and project sustainability. Similarly Wollni, Lee, and Thies, (2010), in a study of conservation agriculture, organic marketing and collective action in the Honduras hills also noted a positive relationship between participation in farmers' groups with adoption of sustainable soil management practices. Best, Thakur, and Kolko, (2010), too found a similar relationship between increase in number of service users and the financial sustainability of telecenters on eCenter project in Kyrgyzstan. This study therefore considered stakeholder satisfaction, number of beneficiaries and number of farmers groups as indicators of project sustainability.

## **1.2 Statement of the Problem**

Although the trend indicates that project concept is the preferred mode of addressing development needs, over 50% of projects implemented in sub-Saharan Africa fail even after successful implementation, (Ika, 2012). Similarly, in spite of continued implementation of food security projects, over 74% of households remain food insecure as indicated in household baseline survey report for Bungoma County, (KALRO, 2014). Implementation of NAAIAP was one of such efforts by the government to increase food productivity among resource poor smallholder famers in Bungoma, (Ministry of Agriculture, Livestock and Fisheries, 2006).

In spite of being among the areas that benefited from NAAIAP, Kanduyi sub-county was noted to remain a high food deficit and with the lowest production per hectares (ha), among all the sub-counties between 2014 and 2016, according to food production and consumption data obtained from Bungoma County. The production per hectares (ha) in the Sub-County remained low at 20 bags/ha against county average production of 29 bags/ha (Bungoma County, 2017). This is worrying and unless the trend is addressed, food security among households in Bungoma County will remain unresolved issue.

Yet past studies into food security problem in the County tended to mainly focus on increasing food productivity (Wabwoba, 2017) and improving food shortage coping strategies among households (Wabwoba, Wakhungu, & Omuterema, 2015). Unfortunately, little attention has

been given to sustainability of implemented projects as an alternative solution. Although several studies have been conducted on NAAIAP (De Groote, Andam, Mugo, Hall, Ngigi, Munyua, & Spielman, 2012; Kipng'eno, 2012; Kiratu, Ngigi & Mshenga 2014; Ochola & Fengying, 2015), none of the studies has examined the sustainability of NAAIAP in Bungoma County or elsewhere in Kenya. There was an urgent need therefore to consider project sustainability by examining the factors that influence the sustainability of NAAIAP in Kanduyi Sub-county.

### **1.3 Objectives of the Study**

The objectives for this study were;

- i. To determine the influence of stakeholders' participation on sustainability of NAAIAP in Kanduyi Sub-county, Kenya.
- ii. To establish the influence of project monitoring on sustainability of NAAIAP in Kanduyi Sub-county, Kenya.
- iii. To examine the influence of project communication on sustainability of NAAIAP in Kanduyi Sub-county, Kenya.
- iv. To assess the influence of stakeholder empowerment on sustainability of NAAIAP in Kanduyi Sub-county, Kenya.

## **2.0 Literature review**

### **2.1 Theoretical Framework**

The sustainability concept was utilized under this study, the concept postulates that "sustainability" is a relative term treated as a property that is an attribute of some artefact. An artefact is any construct that is human made and can take different forms on a continuum between concrete and abstract depending on whether the artefact is tangible or intangible. A point of reference is used to determine whether an artefact is sustainable- implying a change, an innovation or an adjustment. The change or innovation can be idealized from an initial or end state, (Faber, Jorna, & Van Engelen 2005). According to the theory, a relationship exists between an artefact and its environment, the artefact and the environment experience changes of component parts and internal structure. The changes result from exogenous forces from interaction between components or endogenous forces from within. This relationship can either be static or dynamic and the artefact continues to track changes and adapt to these changes to keep the equilibrium intact. The endogenous and exogenous forces create a dynamic state and it is from this that sustainability is attained; the environment of the artefact provides knowledge for learning hence the need to continuously track and adopt to changes in the environment; absolute sustainability is infinite but relative sustainability can be used to inform the state of absolute sustainability at a given point in time, (Mancini & Marek 2004).

The sustainability concept was proposed by Faber, Jorna and Van Engelen in the paper "The Sustainability of 'Sustainability', a Study into the Conceptual Foundations of the Notion of Sustainability", (Faber *et al.*, 2005). The proponents observe that the theory focus on local measures, dialogue and transparency, constant learning and knowledge creation as well as the need to detect process and act upon changes in development at the local level. The sustainability theory therefore was considered appropriate for this study because sustainability of projects can be determined through identification of middle range results that contribute to the overall goal of the project at a given point in time, (Mancini & Marek 2004). The theory allows the consideration of interactions among stakeholders in the project due to changes in needs and interests that influence the dynamism of project sustainability. The changes are monitored and

feedback communicated to stakeholders. Empowerment of stakeholders is undertaken to adapt to changes that keep the project focused on objectives and the goal, (Faber *et al.*, 2005).

The artefact of sustainability under the NAAIAP is the ability of the programme to attain project objectives of reducing the level of poverty and improving food security situation in Bungoma County, (Ministry of Livestock and Fisheries, 2006). The point of reference to determine whether NAAIAP was sustainable were based on the level of satisfaction, change in number of beneficiaries and farmers groups related to project activities, (Best *et al.*, 2010; Davis *et al.*, 2008; Wollni *et al.*, 2010). The sustainability of NAAIAP is influenced by the interests and needs of the stakeholder that determines interaction on the project. The changes resulting from interactions among the stakeholder are monitored and feedback communicated to all stakeholders for the project to attain sustainability. The NAAIAP stakeholders are empowered to enable adaptation to the changes that occur and shift the equilibrium state of the project towards sustainability, (Schilling, 2000).

## **2.2 Empirical Literature**

### **2.2.1 Stakeholder Participation**

Stakeholder participation in project activities is critical for project sustainability (Wang, Hawkins & Berman, 2014) yet often meaningful involvement of project beneficiaries remains a concern on most development projects (Cornwall, 2008). Literature reviewed shows that stakeholder participation serves to evoke acceptance and willingness to adopt a project by the participants (Lindenau, and Bohler-Baedeker, 2014), develop capacity for continued participation (Jana *et al.*, 2004), and to equitably distribute power and benefits among the project participants (Luedeling, Oord, Kiteme, Ogalleh, Malesu, Shepherd & De Leeuw, 2015), which are a prerequisite for sustainability of a project. In spite of this, Li, Thomas and Skitmore, (2012) seem to suggest that most project proponents treat participation as a formality and in the process failing to achieve the intended objectives. But of concern is the influence of such empty ritual stakeholder participation on sustained beneficiary involvement in the activities of a project.

Studies show that projects can be totally managed by local stakeholders, external stakeholders or a mix of both external and local stakeholders (Atkin, & Skitmore, 2008). Luyet, Schlaepfer, Parlange, and Buttler, (2012) indicates that the level of participation by the various actors is vital, however determining such level of participation at different phases of the project appears to be a major challenge to most project proponents (Heravi, Coffey, & Trigunarsyah, 2015). In spite of the awareness of the significance of stakeholder participation in the entire project process (Franzen, Hammer, & Balfors, 2015), often involvement of stakeholders at all stages of the project cycle remains elusive, yet still expected to actively participate at project operation phase.

Although stakeholder participation in decision making is appreciated (Gleason, *et al.*, 2010), it remains a key concern on most projects. Nederlof, and Dangbe'gnon, (2007) observes that stakeholders are often influenced differently by a mix of socio-economic, political or technical factors during the decision making process. There is need therefore to involve all project beneficiaries in decision making if the project is to benefit from a wide acceptance (Chirenje, Giliba, & Musamba, 2013). Being involved in decision making process alone is not enough,

but the influence of opinion in decisions is what counts most (Gleason *et al.*, 2010). However Cornwall, (2008) seem to allude that even where involvement in decision making process is done, often stakeholder opinion does not count in decisions made on project activities. The main concern therefore is the impact of such, on the sustainability of projects.

### **2.2.2 Project Monitoring**

Monitoring of project activities is significant to project sustainability as was shown by Webber, Hill and Reynolds (2007) in a study while examining the sustainability of live-trap program in Budongo forest reserve in Uganda. Unfortunately most existing research studies on monitoring focus on assessing the state of project sustainability (Peano, Tecco, Dansero, Girgenti, & Sottile, 2015), rather than looking at how project monitoring influence such state of project sustainability. Despite this, continuous tracking and adapting to emerging changes is inevitable on a project if sustainability is to be attained ultimately (Faber *et al.*, 2005). Measuring how a project progresses to sustainability is therefore critical and need to be articulated in the short-term, mid-term and long-term time frames on the trajectory of the project performance (Baggett *et al.*, 2015).

Monitoring of projects however require an appropriate process, and literature reviewed indicates that several proposals of monitoring processes have been advanced over time, though with little consensus on the most appropriate process (Danielsen *et al.*, 2008). Nevertheless, there is an agreement among most scholarly work suggesting that inclusion of beneficiaries in the process is of necessity due to the need to sustain the process after withdrawal of external input (Garcia, & Lescuyer, 2008). In spite of this awareness, meaningful beneficiary participation in project monitoring seems elusive on most projects (Jollands, & Harmsworth, 2007). Opponents of beneficiary involvement in monitoring process contend that it is costly, time consuming and local people often lack appropriate capacity. But Holck, (2008) is of the view that with sufficient training or supervision, local people can produce accurate data using conventional methods more cheaply.

Project monitoring is unique and specific as was noted by Hermans, Haarmann, and Dagevos, (2011) in a study of four different cases in the Netherlands. The study Objectives were to develop sustainability index to monitor progress towards the sustainability vision and to ensure that all sustainability indicators had been identified. And the findings showed that; area specific socio-economic conditions influence the selection of monitoring indicators; the challenges of the area influence the purpose of monitoring which impact on the type of indicators selected and that participation enhances stakeholder commitment and acceptance of the end product. In spite of the significance of locals in monitoring, Staddon, Nightingale, and Shrestha, (2015) indicate that involvement of beneficiaries may run a risk of being hijacked and misused by a few community elites if the monitoring process is not well managed. The study finding also implies that it is not just a matter of involving the beneficiaries, but there is need for the beneficiaries to understand and participate in the entire process for successful project monitoring to be realized.

### **2.2.3 Project Communication**

According to Eden and Sedera, (2014) in a study on the failure of Queensland health information system implementation project, demonstrates that sustainability of projects can be attained if project communication is improved. In spite of studies having been conducted to



gain more understanding on project communication, literature reviewed indicates that most research focus on how to improve coordination among project teams (Henderson, Stackman, & Lindekilde, 2016; Bano, Zowghi, & Sarkissian, 2016; O’Leary, Wilson, & Metiu, 2014; Badir, Buchel, & Tucci, 2012), with less attention on how such improved coordination impact on project sustainability. Project communication in fostering shared identity and project objectives among project teams remains a challenge on most projects (Hall, & O’Rourke, 2014). Nguyen, and Watanabe, (2017) cite divergence in perspectives, expectations and interests associated with project stakeholders as the major causes. Project communication as a priority in bridging interpersonal relationships and ensuring a shared project vision among project stakeholders, therefore cannot be under estimated (Henderson *et al.*, 2016).

There seem to be a consensus among project communication scholars that effective communication among project teams enhances satisfaction and performance outcome (Henderson, *et al.*, 2016). Dependence of project communication outcomes on processes involved in the actual communication however continues to elicit further research interest in the area (O’Leary, *et al.*, 2014). Badir, *et al.*, (2012), allude to the inherent complexity, uncertainty and inter-organizational task interdependency associated with project characteristics. The study in addition suggests that depending on the characteristics of a project, the mode and frequency of communication among project stakeholders influence team performance. Findings by Henderson, *et al.*, (2016) on the other hand appear to imply that the level of communication affect interpersonal relationship among the project team members, which is critical in fostering trust and clarity on the project.

The influence of the mode of communication on collective project team performance has been illustrated by Daim, Ha, Reutiman, Hughes, Pathak, Bynum, and Bhatla, (2012), while examining the factors that significantly contribute to communication breakdown on projects. The study findings showed that the mode of communication adopted on a project impact on interpersonal relationships and trust among team members. However of significance is the influence of such impacts on the sustainability of the project. Although feedback is also appreciated as being critical on project team members’ role behaviour (Zohar, & Polachek, 2014), often the mode of communication may not optimize the need for information feedbacks on a project, occasioned by delays or even lack of it. There is need of examining communication feedback on projects to understand the influence on sustainability.

#### **2.2.4 Stakeholder Empowerment**

The study conducted by Ahmad and Talib (2014), assert that empowered stakeholders are critical for project sustainability. Recognition of the significance of empowering local stakeholders in instilling a sense of responsibility, ability to plan and effective decision making is apparent, if sustainability of projects are to be realized (Sianipar, Yudoko, Adhiutama, & Dowaki, 2013). Although literature reviewed indicates that there are many approaches to community empowerment, training appears to be the main focus on most projects (Suarez-Balcazar, Balcazar, Taylor-Ritzler, & Iriarte 2008). Training provides requisite knowledge and skills in addressing emerging concerns on a project, yet often the training process is inadequately structured around availability and needs of the local stakeholders (Butler, & Adamowski, 2015). In spite of this, Crall, Jordan, Holfelder, Newman, Graham & Waller, (2012) seem to suggest that if empowering of stakeholders is attained, it serve to enhance the

rate of project adoption. Despite this, it's not clear from the literature how project adoption influence project sustainability.

The presence of training on a project in the first place is critical if stakeholder empowerment is to be achieved (Carr, Howells, Chang, Hirji, & English, 2009). Though stakeholder empowerment is widely acknowledged, projects often fail to envision a component on adequate training of users (Sianipar, *et al.*, 2013). But even where training is incorporated on projects, of worrying concern is the rate of participation as noted by Hoko and Hertle, (2006). Even though Jana *et al.*, (2004) seem to imply that stakeholder awareness of the training on a project plays a key role in meaningful participation, Lioutas, Tzimitra-Kalogianni & Charatsari, (2010) on the other hand observes that the rate can still be low even where the training is mandatory. Showing how beneficiary participation in empowerment programs remains a real challenge that ought to be overcome.

Acquisition of knowledge under empowerment program on a project in itself is not enough, but the ability to put to use the skills and knowledge gained during the training (Kawakami, Van, Theu, Khai, and Kogi, 2008). Baars, (2010) observes that the practice of skills and knowledge acquired often translates to success in an innovation. The success in the practical application often is a motivation to non-members to participate. And influence sharing and transfer of skills acquired to empower other farmers to sustain the innovation (David, 2007). However, the study findings also show that of concern is the efficiency and effectiveness of knowledge transfer among the farmers. Due to the role of stakeholder empowerment on project sustainability, there is need therefore for better understanding of how the presence of training, participation in the training and transfer of skills and knowledge acquired affect project sustainability.

### 2.3 The conceptual Framework

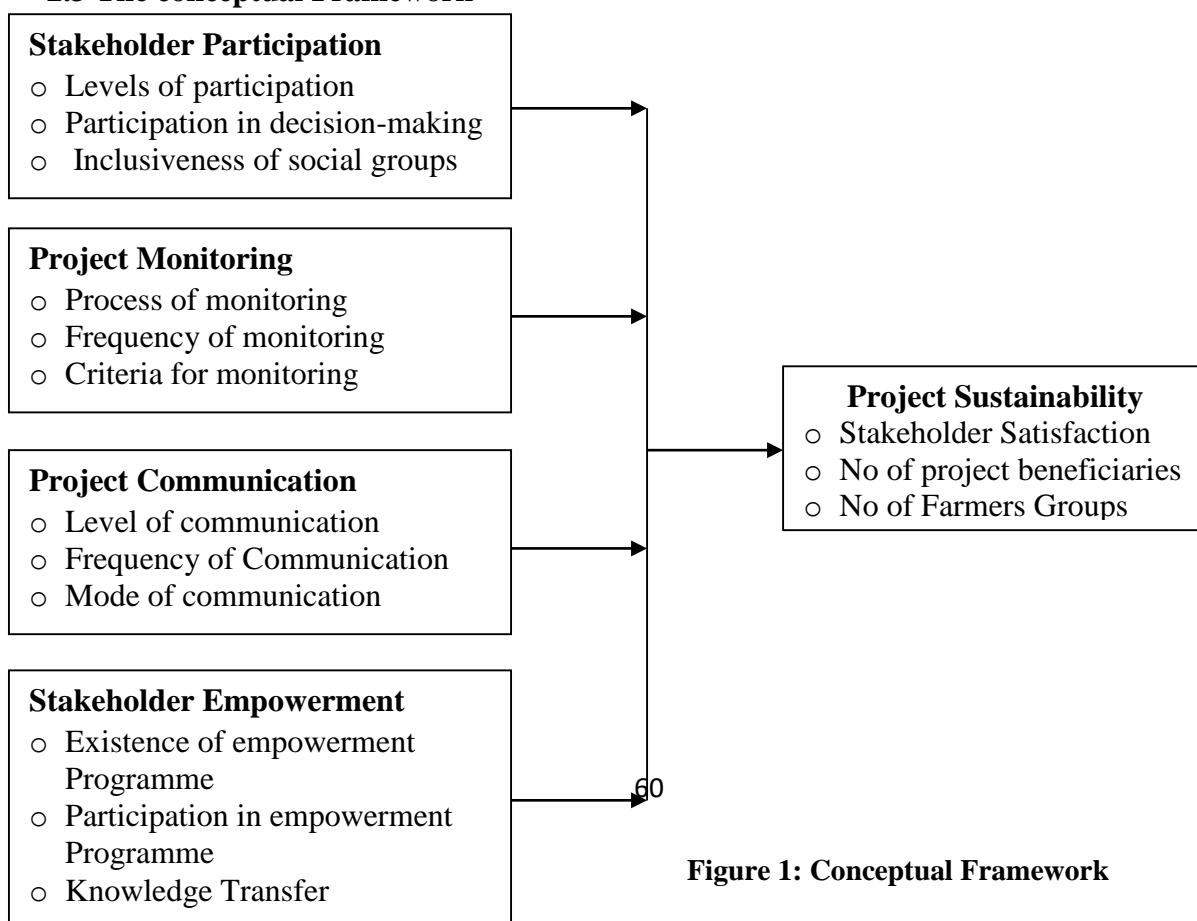


Figure 1: Conceptual Framework

### **3.0 RESEARCH METHODOLOGY**

The study adopted a descriptive research design. The target population was 4,011 beneficiaries that participated and benefitted from the project in Kanduyi Sub-County which was selected due to persistent high food deficit with the lowest production per hectare compared to other sub-counties, according to food production and consumption trend from 2014 to 2016 data (Bungoma County, 2017). The sample size for the study was determined using the formula proposed by Bartlett, Kotrlik & Higgins (2001).

The list of beneficiaries was obtained from the Ministry of Agriculture, Livestock and Fisheries. Systematic random sampling was used to identify the respondents, who were selected at regular interval (Mugenda, 2008). The final list of names were organised based on beneficiaries' area of resident. The area field extension officers were used to assist in locating the respondents. Structured questionnaire was used to collect the data. Pilot testing of the instruments at Namasanda Ward ensured that there were no deficiencies and ambiguities in the final instrument. The research targeted a total sample of 182 beneficiaries with minimum number of anticipated respondents being 118 (65%). The total number of questionnaires completed and returned during the field survey was 130 out of the 182 targeted, translating to a return rate of 71.43%. The achieved questionnaire return rate was considered satisfactory under this study considering Bartlett *et al.*, (2001) opinion of a 65% return rate. The data was analyzed using Pearson Product-Moment and multiple regression model as proposed by Kothari (2009).

### **4.0 RESULT AND FINDINGS**

The section on key results focuses on the description of findings through frequency and standard deviation measures. Multiple regression analysis was used to determine the influence of the independent variables on the dependent using a structural model. The model was subjected to an evaluation of goodness of fit to determine how well the expectations of the regression equation fit the observed relationship in the data under this study (Grace, & Bollen, 2005). The results showed that there was no significant deviation  $F(4, N=130) = 27.69, P < .0001$  in the model and the data, an indication of consistency between the model and the research data. The sequential sum of squares was used to assess the importance of each independent variable to the structural equation model. The findings on the magnitude of each contribution of the independent variables in the equation controlling for other variables was determined.

#### **4.1 Stakeholder Participation**

Participation evokes cooperation and involvement among project stakeholders, creating a sense of ownership and acceptance of projects (Barasa & Jelagat, 2013). Therefore stakeholder participation in shaping decisions and outcomes on projects is increasingly becoming part of service delivery and management (Boviard, 2007). In light of this, the study sought to determine the level of stakeholders' participation, participation in decision making and inclusivity of all social groups in the activities of the project.

Project beneficiaries in the study area were involved in planning and implementation of the project (63.85%). The project had several options of improving household food security from which farmers were to choose and the participation in the choice implemented may have led to the observed results. However determination of the same, participation at all stages of the

project showed that project beneficiaries were not involved at all stages of the project cycle (70.77%). The result suggests that the project proponent may have controlled the process, using beneficiary participation to legitimize the process (Cornwall, 2008).

The project beneficiaries within the study area participated in decision making process (65.39%). An observation which could have been occasioned by reported requesting of farm input among several options available to participants, for improvement of food security under the project. Although project beneficiaries were involved in decision making process, most of the respondents felt their opinion did not influence the decisions made on the project (46.93%). Interesting however was the number of the respondents who were not sure whether their opinion influenced decision making on the project (7.69%). This could have been occasioned by the project being an initiative of the government as part of its policy to improve food security among poor smallholder farmers. Therefore, inadequate knowledge among the beneficiaries about the project may have been a disadvantage in terms of information power relation, creating a feeling of being recipients of the information than equal contributors (Sastre-Merino *et al.*, 2013).

Question on whether all social groups were involved in the activities of the project in the study area showed agreement among the respondents (66.91%). The results could have been due to the deliberate measures under the project to target vulnerable smallholder farmers particularly the very poor, aged, people with disability, the widows, widowers, youth and the orphans. The project in general benefited all social groups within the area of study (70%). The results observed results could have been due to high production of cereals experienced by all those who participated in the project.

The respondents in general were in agreement that stakeholders participated in the NAAIAP project ( $M=3.140$ ,  $SD=0.949$ ). The structural model findings on the other hand showed a positive influence (+0.178), on the sustainability of NAIAP project. The results of the prediction model indicated that for every positive unit change in stakeholder participation, the mean value of sustainability of the project would be expected to improve. The finding implies that an improvement in stakeholder participation would be expected to show an improvement in the sustainability of the project. The level of contribution of stakeholder participation towards sustainability of NAAIAP was 2.293 while controlling for other variables. The value could have been due to being the first variable in the model. Stakeholder participation therefore had a significant positive influence on the sustainability of NAAIAP.

#### **4.2 Project Monitoring**

Continuous measurement, assessment of records and analysis of project information provides critical feedback on progress of project activities (Mulwa, 2008). Monitoring activities requires being done throughout the project cycle, with regular reviews and updating. Project monitoring accounts for the achievement of intended results and cannot be done in isolation but rather as collaborative effort among the project stakeholder (UNDP, 2009). Therefore in this study process, frequency and criteria of monitoring that were adopted on the project was examined to determine influence on project sustainability.

The project findings indicated that project monitoring was part of the project activities and the beneficiaries were aware of a process of recording and reporting project progress information (53.85%). However it seems awareness alone was not enough but application of the process to attain project monitoring objectives is critical. In spite of the project having a process of recording and reporting project progress information, it appears the stakeholders were not taken through the process. This may have led to inadequate understanding and carrying out of monitoring activities as required by the project beneficiaries as indicated by 61.54%. The results could be an indication of rejecting the idea that the beneficiaries were involved in determining the type of project progress information to be collected and reported (81.53%) The finding therefore implies that a gap may have been created in the process of acquiring meaningful monitoring data for feedback and decision making on the project.

The study findings revealed that although monitoring was reported to be regular and frequent on the project (64.62%), it appears the information collected during the process was not significant to the project. The results showed that monitoring indicators used on the project were not agreed upon by the beneficiaries. This may have contributed to inadequacy in understanding of how to carry out the monitoring activities and the process may have impeded learning by the beneficiaries. The project beneficiaries reported of not being involved in deciding on the type of project progress information that was used to measure project sustainability performance outcome (65.39%). The beneficiaries therefore seem not to have been guided by predetermined information which would have been significant in assisting on focusing the type of data to be collected.

The project did not have guidelines and standards that would have assisted in collecting and reporting of project progress information (83.08%), or beneficiaries were not aware of its existence. Lack of monitoring guidelines and standards on the project implied that project beneficiaries did not have a common approach on collecting and reporting project progress information. This puts to question the quality of monitoring data collected, its usefulness and also a suggestion that monitoring feedbacks may not have been utilized in informing or shaping decisions on project progress.

The respondents in general were in disagreement that project monitoring activities on NAAIAP project were adequately conducted ( $M=2.781$ ,  $SD=0.890$ ). The findings from the model showed that project monitoring had a negative influence on the sustainability of NAAIAP. According to the prediction model, the mean value of sustainability of the project was observed to change negatively (-0.0058) for every unit change in project monitoring. The model finding suggests that any improvement in project monitoring was anticipated to show a decrease in the sustainability of NAAIAP. The level of contribution of project monitoring towards sustainability of NAAIAP was 1.010 while controlling for other variables. Therefore project monitoring had a significant negative influence on the sustainability of NAAIAP.

#### **4.3 Project Communication**

Interaction and interdependency among project stakeholders is essential and communication allows circulation of information on concerns, views and expectations (Diallo and Thuillier, 2005). This study therefore set to evaluate timely exchange of information, feedback, understanding expectation, responding to needs and delegation of responsibilities among project stakeholders by examining the mode of communication, level and frequency of

communication. Communication among project participants was mainly by face to face (83.08%), through meetings. The agricultural extension officers who were the project staff sent text messages to group leaders to mobilize members for such meetings with the officers. The results also showed that feedback was not a requirement on the project (86.16%). The observation could have been perhaps due to the nature of communications media adopted. Meeting participants seem to have sought clarity on the information as opposed to reacting to what was being communicated.

Project beneficiaries reported of being free to seek clarification regarding project related information (79.23%). Project beneficiaries were also free to express their feeling on project related issues (77.69%). The results observed could have been influenced by the nature of communication, operating in a meeting setting where beneficiaries were given opportunities to express their observations about the activities of the project. The perception may have also been influenced by project officers who ensured regular visits to the various groups within area of operation to learn of challenges being experienced.

Project communication was reported to be regular among the beneficiaries (81.54%). Project beneficiaries indicated group meetings were more regular and so predictable. The result also appeared to indicate that project communication was frequent (80%). Meetings with project officers were either done on a biweekly basis, after every three weeks, monthly or after every 3 month based on the area of the respondent within the study area. The difference in timing of meetings could have been occasioned by the number of groups within project officer's area of operation, expansiveness of the area of operation and accessibility.

The respondents in general were in agreement that project communication activities on NAAIAP project were adequately conducted ( $M=3.401$ ,  $SD=0.795$ ). The regression model prediction findings indicated that project communication had a positive influence on the sustainability of NAAIAP project. For every unit change in project communication, the mean value of sustainability of the project showed improvement by a factor of +0.101. The level of contribution of project communication towards sustainability of NAAIAP was 1.791 while controlling for other variables. Project communication therefore had a significant positive influence on the sustainability of NAAIAP in Kanduyi Sub-county, Kenya.

#### **4.4 Stakeholder Empowerment**

Stakeholder empowerment enhances awareness and ownership of projects, (Venkatesh & Bala, 2008). However the impacts of stakeholder empowerment on a project can only be felt if the project has a training program in the first place, stakeholders participate in the training and the stakeholders share the acquired knowledge and skills (Jana *et al.*, 2004). The study sought to establish whether the project had a training program, the participation of beneficiaries in the training and whether sharing of knowledge and skills acquired among project beneficiaries was done. There was need for the project beneficiaries to be trained under the project as was reported by (87.69%). The training under NAAIAP was a deliberate measure that was envisaged on the project for empowering the stakeholders to enhance the rate of adoption (Crall *et al.*, 2012). Project beneficiaries within the study area were aware of the training program on the project (89.23%). The awareness creation under NAAIAP was conducted through farmer groups created under the project.

The awareness of the training on the project would be expected to have motivated more of the project beneficiaries to participate in the training, but only 73.08% participated. The findings on the rate of participation in the actual training were inconsistent with the level of awareness reported by the respondents. The result therefore suggests that, there could have been other factors that influenced participation in the training by the project beneficiaries (Lioutas, *et al.*, 2010). The training was not perceived mandatory by the project beneficiaries in the study area (70.77%).

Majority of the respondents were not practicing the knowledge they gained from the training (72.31%). The dis-fuctioning of most farmer groups created under NAAIAP may have contributed to the observed results (Sumane, *et al.*, 2017). The finding also showed that beneficiaries were not transferring, sharing skills and knowledge acquired (62.31%), in spite of the significance of such practice among farmers (Kamarudin, *et al.*, 2015). Lack of success and accrued benefits of the innovation among participating farmers may have led to the observed results as was noted by Baars, (2010).

The overall findings indicated that respondents were in agreement that project stakeholder empowerment activities were conducted on the project ( $M=3.124$ ,  $SD=0.836$ ). The study findings from prediction model on stakeholder empowerment indicated a positive influence on the sustainability of NAAIAP. The results showed that the mean value of sustainability of the project in the prediction model changes positively (+0.420) for every unit change in stakeholder empowerment. The finding suggests that any improvement in stakeholder empowerment would be expected to show a positive improvement in the sustainability of the project (Jana *et al.*, 2004). The level of contribution of stakeholders' empowerment towards sustainability of NAAIAP was 1.353 while controlling for other variables. Therefore stakeholder empowerment had a significant positive influence on the sustainability of NAAIAP in Kanduyi Sub-county, Kenya.

#### **4.5 Project Sustainability**

Project sustainability ensures attainment of long-term impacts of a project through continued provision of benefits to users (Davies *et al.*, 2008). Projects with satisfied stakeholders, high number of beneficiaries (Best *et al.*, 2010) and high number of beneficiary groups (Wollni *et al.*, 2010) through which members actively participate in project activities are more likely to be sustainable in the delivery of project services. The study therefore sought to examine the level of beneficiary satisfaction, the number of beneficiaries who were still practicing the concepts of the project and number of farmer groups formed under the project that were still active in the study area.

The result suggests that all project beneficiaries who participated in the study were in agreement that the project was good. The respondents also indicated that they were pleased with the project (98.46%). But in spite of the observations, the result implies that the project beneficiaries were not practicing ideas received on the project (76.92%). Failure to practice project concepts was attributed to several factors including dis-functioning of the groups, effects of pest and diseases at production and storage, weather factors that affected production over time that affected the surplus to cater for family needs and for cereal banking among some of the very poor smallholder farmers.

Smallholder farmers who were not project beneficiaries were not showing willingness to join in practicing the project concept (76.92%). The failure by project beneficiaries in the current study to practice the concepts of the project may have led to the observed results. This could have been perhaps due to lack of continued tangible benefits enjoyed by project participants, which could have been incentives for other farmers in the study area to join the project (Kimaiyo *et al.*, 2017). The findings also indicated that respondents rejected the idea of non-members enquiring about the project (83.85%). The project seemed unattractive to non-members and the number of beneficiaries practicing the project concepts could have decreased instead of increasing.

Farmer groups formed under the project in the study area were inactive at the time of the study (93.08%). The observation could be attributed to poor leadership, un-cooperation among members or dishonesty among the leaders. Inadequate leadership skills among the officials or group management skills among most beneficiary groups in the study area may have played a role (Sondaal *et al.*, 2018). The findings in this study therefore imply that, the inactive nature of the group members may have been influenced by some of the factors highlighted by Islam *et al.*, (2011). Members of farmer groups on the project were not active in the activities related to the project in the study area (94.62%).

The general findings indicated that respondents were in disagreement that the project (NAAIAP) was sustainable ( $M=2.744$ ,  $SD=0.639$ ). However prediction model findings indicated that the value of project sustainability would be expected to have a positive mean value if the values of the predictor variables were zero (+1.24). The findings also showed that stakeholder empowerment strongly influence project sustainability in the prediction model.

## **5.0 CONCLUSION**

Project concept is the preferred mode of development to enhance project success, but in spite of this, project failure remains a concern among stakeholders. Similarly several food security projects have been implemented in Bungoma County, but food security remains a major concern, with over 74% smallholder farmers being food insecure. The response has been to implement more projects on food production improvement, but the problem seems to persist. Unfortunately, little attention has been given to sustainability of implemented projects as an alternative solution. This study therefore aimed to determine factors influencing project sustainability of National Accelerated Agricultural Inputs Access Programme (NAAIAP) in Kanduyi Sub-county, Kenya. Although there are several factors that influence project sustainability, this study focused on determining the influence of stakeholder participation, project monitoring, project communication and stakeholder empowerment on sustainability of (NAAIAP) in Kanduyi Sub-county, Kenya.

The study findings from the prediction model indicated that the value of project sustainability under the current study would be expected to have a positive mean value of 1.2350 if the values of the predictor variables were zero. Stakeholder empowerment was noted to strongly influence project sustainability in the prediction model with a high mean value change for every unity change. All variables in the study showed a positive influence on project sustainability except for project monitoring which had a negative influence. The value of sustainability of the project in the prediction model was observed to change by; 0.178 for stakeholder participation, -0.0058



for project monitoring, 0.101 for project communication and 0.42 for stakeholder empowerment for every positive unit change in the mentioned factors.

## **6.0 RECOMMENDATIONS**

Findings under this study indicated the need to involve stakeholders at all stages of the project and taking into account the opinion of the beneficiaries and possibly highlighting how their opinion has been used, to develop perception of ownership of the project and a feeling of being valued. Where possible identify and support local existing projects with similar concepts as the intended project.

There is need to assist stakeholders to understand the process of monitoring as a way of empowering project beneficiaries. The stakeholders need to be informed of the type of information required and the use as well as the significance of such information. The project beneficiaries need to be involved in the process of identifying the indicators to meet the information requirement agreed upon on the project. Monitoring guidelines and standards need to be formulated and communicated to the stakeholders to create a common approach and uniformity in reporting.

Critical personal challenges faced by smallholder farmers that could be of value to the project can sometimes be overlooked in a group setup. There is need therefore to provide a variety of communication modes on a project to offer opportunity to those who cannot speak in public; hijacking of meeting by few individuals denying others a chance, particularly marginalized groups or fear of victimization to express personal opinion in a meeting.

There is need to empower smallholder farmers as facilitators to build their capacity to train others instead of being targeted as ultimate consumers of the information. This stifles the ability to transfer the acquired skills. There is need to work with the stakeholders for more than one season for annual projects to provide participants with an opportunity of learning from project challenges. Smallholder farmers also ought to be sensitized on forming groups with people they have a comfortable working relationship, instead of feeling obliged to belong to a certain group. The groups should also have criteria of choosing the officials with basic requirements such as integrity, leadership skills and group management skills.

### **6.1 Areas for Further Research**

The project (NAAIAP) was implemented in many counties in the country, but the current study focused on NAAIAP in Kanduyi Sub-county. There is need for future comparative studies between implementation areas, to assess the influence on the study factors by the difference in social factors. Such comparison could be of significance in better understanding the factors under this study and how project sustainability is influenced.

The current study focused on the description of the relationship between the factors under study and project sustainability without attempting to assess cause-effect relationship between independent and the dependent variables. There is need for future studies to determine the cause effect relationship between the factors considered under this study. The knowledge on cause effect relationship if established will provide better information on controlling for the factors in a project setup to achieve optimal project sustainability.

The main concept of the project was the attainment of cereal banking among the smallholder farmers. However this was greatly dependent on the sustained functioning of the farmer groups. There is need therefore for future studies to assess the effects of dynamics in farmer groups on project sustainability.

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