Participatory Project Implementation and Performance of Mango Farming Projects in Makueni County, Kenya

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ABSTRACT

The purpose of thisarticle is to vouch for empirical research evidence from PhD thesisto showthe need ofcraftinga working implementationpolicy to enhance mango performance.Thestudysought to determine the influence of participatory project implementation on performance of mango farming projects. A sample of 375 respondents was recruited by multistage sampling technique from a study population of 12,622 mango farmersusing Krejcie and Morgan (1970). Descriptive and inferential data analysis techniques were applied. Null hypothesis which stated that, there is no significant relationship between participatory project implementation and performance of mango projects was tested through F-test and correlation.The results revealed a statisticallysignificant correlation between the two variables at 95% confidence level, Df(2,367) F=3.21, t=6.511,p=0.000<0.05, r = 0.233 and R^2= 0.082,the null hypothesis was rejected. Based on the findings, the article concludes that mango farmers need a lot of extension services support during implementation time and recommends embracingof participatory project implementationapproach to enhance mango performance.

Key words: Participatory Project Implementation,Performance, Mango Farming Projects,project management life cycle

1. INTRODUCTION

The study sought to determine the influence of participatory project implementation on the performance of mango farming projects in Makueni County, Kenya. The mango fruit, which is the basis of this study, has become one of the most cultivated fruits in tropical lands. However, various challenges have emerged on its performance due to environmental concernsof climate change and global warming, besides other managerial aspects on land tenure systems. Adopting participatory project implementation to enhance performance can turn-around performance challenges. Increase in world's populationhas affected mango productionmakingthem quite limiting, because large spaces of land needed.Mango trees occupy large tracks of arable lands which competesforusewith otherstaple food crops.Globally, mangoes consumption has increased tremendously over the years, making them to be grown and sold widely, as they have been found to constitute essential dietary nutrients (Bokonon-Ganta, Groote and Neuenschwander, 2001).

Mango production faces numerous problems that have led to huge losses traceable along the preharvest and postharvest stages due infestations of fruit fly pests and diseases, besides other human induced environmental attributes. India is the world's leading producer of mangoes though experiencing challenges of mango performance due population increase standing at over 1.366 billion (Tharanathan, Yashoda and Prabha 2006). Even the midst problems, the success of the Indian Alphonso mango variety, has stood out amongst the most developed natural products, otherwise called ruler of organic products and profoundly requested for chutneys, pickles and other mango items(Purushottam, 2015).Marketing strategies that induce and spur growth should be adopted with the help of agricultural extension officers and marketing experts to enhance mango quality and quantity.In Kenya alone, over 300,000 tonnes of mangoes got spoiled because of not picked in time or could not be processed quickly enough after harvest to avert the losses (SAFE FOOD, 2017). It was also reported that, in southern Africa alone, 50% of the mango fruit and vegetables perished during preharvest production and along postharvest stages due to lack of enough storage facilities, andexacerbated by transport problemsleading to delays in normal and nominal capacity processing time (SAFE FOOD, 2017). Expensive transport and lack of concertedeffort in coordination made most mangoes never reached markets in good time. A well-coordinated link involving farmers, traders, processors, retailers and other stakeholders, if well formulated, would promote farmers welfare by use of "linking farmers to markets" approach (FAO, 2007).

In spite of the reported high poverty levels (KNBS,2019) Makueni mangoes have been reported to fetch high prices in local and global markets displaying disguised impressive returns on investment.Mango farmers were not able to breakeven in monetary returns due low price offered by middlemen. A study on Mangoes revealed that, without organized marketing cooperative movement and even with the presence of several mango buyers, mango gross margins were as low as Kshs.1.70 per piece (Muthini, 2015). One mango piece could fetch between 25 and 30 Kenya shillings in national markets and much more in international markets, exposing a huge margin of price discrepancywhich did not commensurate with mango production costs (HCDA, 2010).

2. Statement of the Problem

Performance of mango farming projects has become an area of great concern due numerous challenges faced. To enhance Performance, mango projects should be implemented in collaboration with mango farmers, county agricultural extension officersand other development partners. Thisis envisagedto improve efficiency and effectiveness in implementation, in the whole mango chain. This is because, preharvest problems spilled over into postharvest stages, which lead to huge losses and low performance. A study in Ghana on performance of agriculture-based projects showed that poor results, with no little signs of improvement on performance, were due to many losses experienced at once (Boakye, 2014). Controlling the rotting of mangoes in farms required early precautionary measures to prevent the damage before it happened due to numerous mango diseases and pests infestations. Early warning precautionary monitoringwas needed because preharvest challenges spilled into postharvest stages making threshold quality not to be attained at the harvest time, when the damage had already occurred.

Addressing the onset of diseases and pests is paramount. Lack of good mango orchardmanagement and participatory implementation practices reduced mango yield in mango farms. A mango implementation policyseemed was missing in the whole mango chain leading to low prices.Experiences of mango drying up, wilting of budding flowers and falling of premature young mangoes has affected improved mango production and in turn affected marketing. Use of outdated technologies and 'dearth' of infrastructure, including high cost of farm inputs, inefficient coordination of responsible public institutions,were cited asmajor impedimentsto performance (Purushottam, 2015).Mostmango projects did face numerous implementation constraints and production challenges which were exacerbated by prevailing environmental factors, besides absence of tangible proactive mango cooperative movement.It wasreported in a study that,agricultural projects failed to achieve thedesired performance, after taking their own project cycle direction, making them not to achieve the intended goals (Hart, Burgess and Hart, 2005).

The emerging trend was an eye opener of apricots, nectarines and peaches projects undertaken without following any direction, without any clear plan or management framework, making them fail to achieve the d initially planned goal(Hart *et al*, 2005). It has been shown further that, those apricots, nectarines and peaches projects, did not involve the real participation making the projects to continue with a life of their own without clear direction, consequently failing to achieve the expected outcome(Hart *et al,* 2005).Due to lack of participatory project implementation, Makueni mangoes had experienced low performance, which needed to be enhanced to improve rural economy and living standards of mango farmers.

3. Participatory Project Implementation and Performance of Mango Farming Projects

Project implementation, also referred to as project execution is the 3rd phase or stage of the project management life cycle which involves putting all project plans into action or in activation processes to achieve the desired project performance outcomes. Implementation is a strategic-fit process composed of project plans thatare able accomplish envisaged objectives and goals to deliver a beneficial unique change to improved performance.In participatory project implementation phase in mango projects, project activation and ground-breaking concerns of plantingquality mango rootstocks, cultivars, cultigensand scion saplings from registered nurseries to enhance performance. Concerted effort is needed to offerfeasible solutions in researchingfor prolific mango rootstocks and scion saplings, enhanced with implementation of the world's best mango varietiesfrom functioning institutions, has elevated India tobecome the largest producer ofmangoes globally, with nearly 46% contribution(Purushottam, 2015).

The world should also learn from the Konkan region mango belts which are regarded as the producer of the 'world's king of all mangoes', which made theKonkan mangoes the economic pillar of the India's rural communities (Burondkar, Kulkarni, Salvi, Patil, Narangalkar, Joshi, Talathi, Naik, Malave, Bhosale, Deorukhakar, Bagade, Patil, Rane, Dodake, Haldankar and Bhattacharyya, 2018). However, even with this impressive achievements withhigh mango prolificacy rate of Alphonso mango and other varieties, poor mango orchards efficiency were reported as an 'on and off' in annual changes of mango produce,making mango cultivators of India face grave challenges due to dearth of infrastructure and middle men menace(Purushottam, 2015; Burondkar *et al*, 2018).

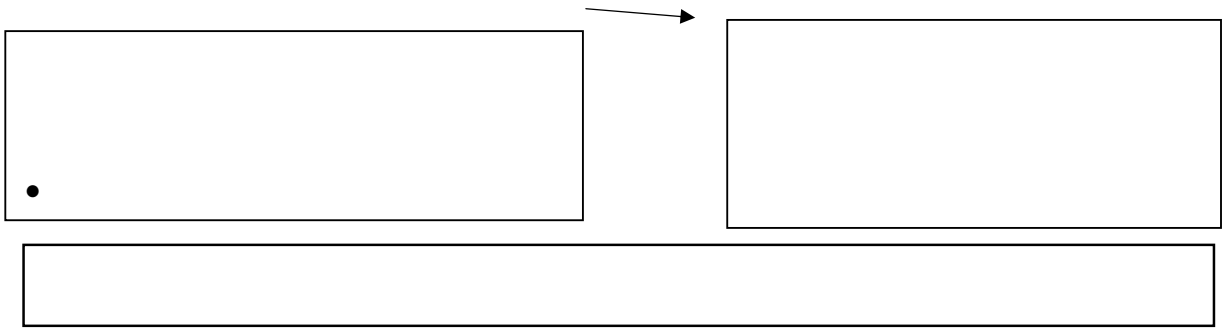
Many mango projects in Makueni County fail to meet improved planning and implementation noticeable in the whole mango production value-chain, starting from pre-harvest to post-harvest stages. Planning for implementation(Mbeche *et al*, 2013; Burondkar *et al,* 2018), implementation ideas can be borrowed from them for proper propagation of mangoes to ensure improved production with recommendation from experts on plant spray protection schedules and care. Mango implementation is activating and sequencing iterative project activities to achieve the envisaged planned outcomes which are spread over time since the mango tree takes a few years to starting bearing fruits. In order to achieve improved mango production, feeding of organic foliar nutrients and growth regulators are important from February onwards in every year (Burondkar, *et al*, 2018). Proper mango implementation phase influences the overall performance of mango in utilizing resources in different orchards,in different environmental setups.Quality mango entails good management practices that influence the participatory project implementation criterion to spur enhanced mango performance to improve socio-economic growth and development. Though mango farming is still in its infancy stage due limitations of production practices brought about by emergingchallenges, there is still great potential in planting researched mango cultivars and cultigens in pre-harvest phase to improve quality and quantity at the post-harvest stages (Neguse, Fredah, Wanzala, Wassu, Owino, and Mwangi, 2019).

Implementation of sustainable mango projects is highly sought for, to account for sufficient local production diversity using local stakeholder capacity to contribute positively towards spurring economic growth of agriculture for faster rural development. Implementation entails the use resources, human and capital in establishing a project that solves the identified people problems. Mango farmers are usually confronted with many pests' problems during mango planting,requiring different management options and production strategies to reduce mango rejections duringexport to global markets (Akotsen-Mensah, Ativor, Anderson, Afreh-Nuamah, Brentu, Osei-Safo, Boakye and Victor-Avah, 2017).

In post-harvest phase, implementation of value addition of dried mango samples showed to decrease at moderate percentages, meaning a lot mangoes solutions lies within the implementation process (Gökcen and Taskin, 2017). In post-harvest phase, ripe mangoes can be processed in different forms such as fruit concentrate, juice, puree or mixes to avert post-harvest losses (PHLs) (Rajkumar, Kailappan, Viswanathan and Raghavan, 2007). The implementation of projects' triple competing constraints of project management triangle (scope, cost and scheduling timelines) ensures quality that meets the planned for implementation outcomes (Mbeche *et al*, 2013; Goldratt, 1980). Many development projects succeed or fail at the planning and implementation phases, which replicates in Makueni mango challenges. Integration and interaction of the management process with project resources of human skills, machinery tools and other implements could contribute to achievable project realities (Turner, 1999).

4. Theoretical Framework

A theoretical framework grounds itself intheories since were developed because the aspects on the real-world were so complex that they needed to be conceptually simplified in order to be understood scientifically (Dubin, 1976). The Stakeholder Theory(Freeman, 1984), Ladder of Citizen Participation Theory (Einstein, 1969), Theory of Constraints (Goldratt, 1980) and Project Management Theory (Warburton and Cioffi, 2014) were inclusively used together in this study to complement each other in addressing the needs issues in participatory project implementation undertaken through the triple constraints of cost, time and scope. The conceptual framework interplay showsthe influence of the participatory project implementation on the performance of mango farming projects in Makueni County Kenya. The Stakeholder Theory brings together mango farmers and experts to participate in the implementation process to enhance mango performance. Theory of constrains envisages improved mango costs, the scope and timeframe in mango production. The ladder theory is community based planning process essential,in planning for implementation as advanced by (Mbeche *et al,* 2013), and be used to actualize the participatory project implementation process in the mango growing communities.



6. RESEARCH METHODOLOGY

6.1 Research Paradigm

The Pragmatism research paradigm is action-based in predicting the direction of the statement problem and data analysis techniques,since it embraces and supports plurality of mixed methods (qualitative and qualitative) (Kaushik and Walsh, 2019).The adopted pragmatism research paradigm as it enabled the researcher to theorize on study inquiry by vouching supportive epistemological stance of the ontological phenomenon under study. A research paradigm is important in a study as it comprises specific bounding philosophical assumptions or underpinnings, which directs and guides the researcher's thinking and actions (Gakuu, Kidombo and Keiyoro, 2018).

6.2 Research Design

The study used descriptive and correctional study designs for purpose of using descriptive and inferential statistics as the techniques of data analysis in order to be able to generalize and infer the results into the target population. The study also sought to answer the postulated research hypothesis and the descriptive research questions in two categories of mixed method modes of quantitative (positivism) and qualitative (post-positivism) approaches (Creswell and Plano, 2011).

6.3 Target Population

The target population was12, 622 of mango farmers in Makueni County, Kenya. The study involved mango farmers who were the 375 mango farmers who were the respondents. The researcher selected purposively Makueni County Kenya as an area of study since it was the leading producer of mangoes in Kenya's 47 counties, with more mango farmers increasing annually according to (FAO, 2011).

6.4 Sample Size

The study made use of (Krejcie and Morgan, 1970) table statistical formula for sample size determination, out of which a simple size of 375 was realized out of the target population of 12,622 of mango farmers. However, 369 questionnaires were returned and analyzed in this study.

6.5 Sampling Procedures

This study used multistage sampling technique because it involved a large population of respondents spread in different sub-counties that make up Makueni County. This tallies and concurs with (Stutely, 2003; Oso and Onen, 2010), whereby the smallest number in stages of each category within overall sample is included until all respondents are selected randomly in the study area.

7. Research Instruments

This study used of questionnaires, observation and interview guides to collect data. Structured anonymous self-administered 375 questionnaires were used to collect quantitative data from the respondents. Interview guide was used to collect qualitative data from 15 key informants from the six sub-counties. Observation guide was used to record information observed in the study area. A In this study, mixed method with involves qualitative and quantitative data had a better triangulation of the data collected and analyzed.

7.1 The Pilot as a Mini-Study

This pilot mini-study had 40 respondents. It has been suggested that 10-30 respondents (Isaac and Michael, 1995) and 10 to 30 (Hill, 1998) participants for pilots in a survey research is suitable, if sample size is expected to be 300 or more respondents. Existing literature on pilot study sample determination suggests that a 10% of the sample projected for the larger parent study is suitable (Connelly, 2008). Pilot studies are mini versions of a full-scale study as well as the specific pre-testing of a particular research instrument such as a questionnaire or interview schedule with likelihood of increased success (Teijlingen and Hundley, 2002; Cronbach, 1951).

7.2 Validity of the Questionnaires

It has been reported that, samples and designs do not have validity in themselves, but only the study propositions can be said to be valid for inferences or conclusions for generalizing findings in the entire study population (Kothari, 2011). The Content validity used in study is about face validity and sampling validity, which called for investigator's subjective evaluation of a measurement and the external validity which evaluates the extent to which the results of a study can be generalized from a sample to the target population (Nachmias and Nachmias, 2005).

7.3 Reliabilityof the Questionnaires

Cronbach's alpha determined the reliability of the questionnaire. The results indicated that the questionnaires used in this study were reliable for conducting the major research. In the Participatory project implementation, the pilot mini-study realized a 0.924 which is within the acceptance criterion of internal consistency of Cronbach Alpha (Cronbach, 1951). A Cronbach's alpha score of 0.924 in Participatory project implementation was obtained. The Cronbach alpha values range between 0 and 1.0; while 1.0 indicated perfect reliability, the value 0.70 was deemed to be the lower level of acceptability (Trochim, 2006). The Cronbach's Alpha of 1951 acceptance values ranged between 0.7 and 1 in all actual pilot study questionnaires and were fit for this study, threshold for an acceptable value (Taber, 2018).

8.0 Qualitative Data Analysis

The research hypothesis was tested using correlation analysis, in whose Pearson's product moment correlation coefficient r swings between 1 and -1, to show relationships between the twovariables being tested. Regression inferential statistical analyses presented the p-value and fisher's F-test as they displayed their normal distribution values in the analysesof the parametric data. The correlation coefficient R^2 displayed the variations, the independent variable had on the dependent variable. The Beta values contributed the amount of change the predictor variable had on the dependent variable. The Fisher's F-test showed the model goodness of fit of the regression line shown the normal distribution of variables, according to (Fisher, 1935).

8.1 Quantitative Data Analysis

The qualitative data was analyzed by content analysis. Content analysis entailed securitizing and putting themes into patterns of qualitative data in the Interview and Observation Guide data of what the respondents and key informants said on the questions asked in the study area.

9. Descriptive and Inferential Statistical Analysis

The study sought to determine how participatory project implementation influenced performance of mango farming projects in Makueni county, Kenya. To measure how participatory project implementation influenced performance of mango farming projects, the following Twelve (12) Likert scale items were presented to the respondents and they were requested to indicate their level of agreement with the given statement on a scale of 1 to 5 with, SD= strongly disagree, D= disagree, N= neutral, A= agree and SA= strongly agree. The results were presented in Table 1.1.

Table 1.1 Participatory project Implementation and performance of mango farming projects

No.	Statement	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	SD
14a	The sources of most grafted and non-grafted mango seedlings are not bought	72 (19.5)	159 (43.1)	88 (23.8)	30 (8.1)	20 (5.4)	2.8	2.54
14b	Most farmers buy the mango scions and graft their own planted local rootstocks	88 (23.8)	112 (30.4)	60 (16.3)	55 (14.9)	44 (11.9)	2.5	2.41
14c	Farmers do not use own scions to graft mature indigenous/ local mango trees	32 (8.7)	44 (11.9)	56 (15.2)	177 (48)	100 (27)	4.1	2.67
14d	Most mango farmers use mango scions from their own mango nurseries	77 (20.9)	96 (26.0)	75 (20.3)	50 (13.4)	71 (19.2)	2.8	1.39
14e	Indigenous/local mangoes are less susceptible to mango diseases and pests	10 (2.7)	14 (3.8)	38 (10.3)	107 (29)	200 (54)	4.3	2.22
14f	Exotic/grafted mangoes are not more prone and susceptible to pre-harvest mango diseases and pests	30 (8.1)	168 (45.5)	22 (6.0)	29 (7.9)	20 (5.4)	1.6	1.95
14g	Exotic/grafted mangoes are more prone and susceptible to post-harvest mango diseases and pests	20 (5.4)	29 (7.9)	22 (6.0)	50 (13.4)	148 (40.1)	3.9	2.1

14h	Most mango farmers do not use cultural methods to control mango pests and diseases	55 (15.0)	48 (13.0)	105 (28.5)	80 (21.7)	81 (21.8)	3.2		1.18
14i	Most mango farmers use agro-chemicals to control pre-harvest mango pests and diseases	30 (8.1)	32 (8.7)	38 (10.3)	202 (54.7)	105 (28.5)	3.0		2.01
14j	Most mango farmers use biological to control mango pests and diseases	104 (28.8)	118 (32.0)	65 (17.6)	40 (10.8)	42 (11.4)	2.5		2.79
14k	To dig holes and planted mango seedlings you do not use hired labour	165 (44.7)	40 (10.8)	65 (17.6)	40 (10.8)	59 (16.0)	2.5		3.74
14l	You use experts to graft mango varieties in your farm and plant mango processing	19 (5.1)	20 (5.4)	23 (6.2)	108 (29.3)	199 (53.9)	4.2		4.43
	Composite mean and standard deviation						3.025	2.3325	
	n=369 Composite mean =3.025 Composite standard deviation=2.3325 Cronbach's Alpha (a) Reliability coefficient =0.924								

Table 1.1 shows composite mean (M) for the performance of mango farming projects was 3.02 and the standard deviation was 2.33. This implied respondents were more neutral on that implementation influenced performance of mango farming projects. The reliability coefficient that measured the performance of mango farming projects was 0.924. This showed that the items had very strong internal consistency.Item 14a sought to determine opinion of the respondents on the statement that, the sources of most grafted and non-grafted mango seedlings were not bought. Results on majority (43.1%) disagreed with the statement while 23.8% were neutral. The item had mean of 2.5 and SD of 2.54 indicating respondents disagreed with the statement. This mean was less than the composite mean implying that the sources of most grafted and non-grafted mango seedlings had influence on the performance of mango projects. These results agree with the interviewed informants who stated that, most farmers bought grafted and non-grafted mango seedlings. Similar results were encored by one mango farmer who said;

"Most of us find it hard to plant enough seedlings so we end up buying most grafted and non-grafted mango seedlings".

These results also agree with (Neguse, 2012) who studied mango production quality mangoes established that, though mango farming is in its infancy stage were low due production practices and constraints, there was great potential in planting quality mango main cultivars in pre-harvest and post-harvest stages to increase production respectively. This was portrayed by availability of grafted and non-grafted mango seedlings as well as scions in the market. Item 14b further determined opinion of the respondents on the statement that, most farmers buy the mango scions and grafted their own local rootstocks. Results indicated majority (30.4%) disagreed with statement while 23.8% strongly disagreed. The item had mean of 2.5 and SD of 2.41 indicating that the respondents disagreed with the statement. This mean was less than the composite mean implying sources of mango scions had less influence on the performance of mango projects. These results were supported by one farmer who said,

"It is always cheaper for us to buy the mango scions and graft our own local rootstocks instead of buying grafted seedlings, that's why most farmers buy the mango scions and graft for themselves."

Item 14c sought to determine opinion on the statement that, farmers did not use their own scions to graft mature indigenous/ local mango trees. Majority 48% agreed on the statement while 15.2% were neutral. The item had mean of 4.1 and SD of 2.7 indicating neutral about the statement. Item 14d sought to determine opinion on the statement that, most mango farmers used mango scions from their own mango nurseries. Results 26% of respondents agreed while 20.9% strongly disagreed. Item had mean of 2.8 and SD of 1.9 indicating respondents were neutral. The mean was less than the composite mean implying this item had less influence the performance of mango projects. Item 14e sought to determine opinion of the respondents on the statement that, indigenous/local mangoes were less susceptible to mango diseases and pests. Results indicated majority (54%) of the respondents strongly. Item had mean of 4.3 and SD of 2.22 indicating they agreed. Mean was less than the composite mean implying the item had less influence on performance of mango. These results were backed by the key informants who stated that, indigenous/local mangoes were less affected by mango diseases and pests compared to grafted mangoes. Also one of the farmers during the interview said,

"Although indigenous/local mangoes take a very long time to mature compared to grafted mangoes, they are less susceptible to mango diseases and pests".

Furthermore, (Aref, 2011) also agreed with the results and argued that participation in agriculture was important for development, meaning that, indigenous/local mangoes being less prone and susceptible various diseases could spur development in the long economic run. Item 14f sought to determine opinion of the respondents on the statement that, Exotic/grafted mangoes were not more prone and susceptible to pre-harvest mango diseases and pests. The results indicated that majority (45.5%) of the respondents disagreed. The item had mean of 1.6 and SD of 1.95 indicating they disagreed with the statement. This mean was less than the composite mean implying the item had less influence on performance of mango projects.

Further, item 14g sought to determine opinion of the respondents on the statement that, exotic/grafted mangoes are more prone and susceptible to post-harvest mango diseases and pests. The results indicated that majority (40.1%) strongly agreed. The item had mean of 3.9 and SD of 2.1 indicating that they agreed. The mean was more than the composite mean implying that the item had influence on the performance of mango projects. Item 14h sought to determine opinion of the respondents on the statement that, most mango farmers do not use cultural methods to control mango pests and diseases. The results indicated that 28.5% of the respondents were neutral. The item had mean of 3.2 and SD of 1.8 indicating they were neutral about the statement. Results agreed with key informants who indicated that most farmers did not use cultural methods on mango pests and diseases. Also one of the farmers during the interview said,

"The current mango diseases can't be controlled by cultural methods, so most farmers buy chemicals to control mango pests and diseases".

The results were also supported by, (Simiyu, 2018) who argued that, most farmers buy chemicals to control mango pests and diseases as the traditional methods are not adequate for controlling pests and diseases. Item 14i Determined opinion of the respondents on the statement that, most mango farmers use agro-chemicals to control pre-harvest mango pests and diseases. The results indicated that majority 54.7% strongly agreed. The item had mean of 3.9 and SD of 2.01 indicating they agreed with the statement. The mean was more than the composite mean implying the item had influence on the performance of mango projects. Further, item 14j sought to determine opinion of the respondents on the statement that, most mango farmers used biological methods to control mango pests and diseases. The results indicated that 32% of the respondents disagreed. Item had mean of 2.5 and SD of 2.8 indicating they disagreed with the statement. This mean was less than the composite mean, implying item had influence on performance of mango projects. These results are in line with the interview results where one farmer said,

"Most mango farmers are not aware of the biological methods to control mango pests and diseases and therefore, they rarely use them."

Item 14k sought to determine opinion of respondents on the statement that, to dig holes and plant mango seedlings you did not use hired labour. Majority (44.7%) strongly disagreed with the statement. The item had mean of 2.5 and SD of 3.7 indicating that the respondents disagreed with the statement. Item 14l sought to determine opinion of the respondents on the statement that, you used experts to graft mango varieties in your farm. The results indicated that majority 53.9% of the respondents strongly agreed. The item had mean of 4.2 and SD of 4.43 indicating that the respondents agreed with the statement.

Hypothesis Testing

Pearson's moment correlation technique was used to test the null hypothesis to determine the relationship between Participatory Project Implementation and Performance of Mango Farming Projects, the study sought to determine. The results in Table 1.2:

Table 1.2 Correlation between Participatory Project Implementation and Performance of Mango Farming Projects

		Participatory Project Implementation	Performance of Mango Farming Projects
Participatory Project Implementation	Pearson Correlation	1	.655(**)
	Sig. (2-tailed)		.000
	N	369	369
Performance of Mango Farming Projects	Pearson Correlation	.655(**)	1
	Sig. (2-tailed)	.000	
	N	369	369

** Correlation is significant at the 0.01 level (2-tailed).

Results in Table 1.2 shows that, there was a significant positive relation between Participatory Project Implementation and Performance of Mango Farming Projects (r=0.655, p=0.000). This infers that there is a very strong association between Participatory Project Implementation and Performance of Mango Farming Projects.

Table 1.3 Simple linear regression results for the association between Participatory Project Implementation and Performance of Mango Farming Projects

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.233(a)	.082	.066	3.562

ANOVA (b)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.55	2	21.53	3. 21	.000(a)
	Residual	21.02	367	12.18		
	Total	32.57	369			

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	3.921	3.137		10.172	.000
	Participatory Project Implementation (X_3)	2.028	.311	.218	6.511	.000

a. Dependent Variable: performance of mango farming projects.

b. Predictor Variable:Participatory Project Implementation.

The results from Table 1.3 shows that, Df(2,367) F=3.21, t=6.511 at level of significance P=0.000<0.05, r = 0.233 and R square= 0.082. The results signified that at 5% level significance and 95% level of confidence, the test was statistically significant and therefore, the null hypothesis was rejected.Table 1.3 shows the results of the adjusted R squared is 0.066, which infers that 6.6% of the variations in performance of mango farming projects were influenced by Participatory Project Implementation, while the other variations were determined by other factors outside the model. Again, the ANOVA results indicated that the model was statistically significant, F (2,367) =3.21. The linear regression model is; $Y= 3.921 + 2.028X_3$,Where, Y = performance of mango andX_3 = Participatory Project Implementation.The beta value of 2.028 infers that, one increase in Participatory Project implementation increased performance of mango farming projects by 2.028 units and vice versa. This confirmed that Participatory Project implementation had a significant influence on the performance of mango farming projects. Based on the study findings, hypothesis H_{03} which stated that, there was no significant relationship between participatory project implementation and performance of mango farming projects in Makueni County Kenya, was therefore rejected.

Conclusion

Implementation of sustainable mango development projects was needed to account for sufficient local diversity and local stakeholder capacity to contribute positively towards enhanced mango performance. Based on the study findings, there was low performance in the whole mango value chain. On improving performance, quantity and quality of the mango fruitwasinfluenced by good management practices, which was lacking.Theimplementation criterion would have influenced the overall performance in order toattaina higher economic growthand developmentfor the low performing rural economies. This study concludes that, mango farmers should seekfor extension expertstoenhance mango performance to break-even in most mango farms.

Recommendation

This study therefore, recommends the use participatory project implementation for practice andpolicy formulation purposes, in conjunction with agricultural and market experts, since mango needs technical support to realise meaningful performance. In order to achieve improved socio-economic growth and development in the mango growing zones, participatory implementation practice is recommended.Mango farmers should always seek participationexpert supportof extension service providers to increase production and markets. The countyministry of agriculture should also perform more research on local mango varieties instead of relying wholly on exotic mango varieties researched in foreign countries, since they do not offer mango focus and differentiation in the competitive world markets.

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