


ENHANCING PERFORMANCE OF MANGO FARMING PROJECTS THROUGH PARTICIPATORY PROJECT MANAGMENT

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ARTICLE INFO	ABSTRACT
<p>Article history: Received: Jun, 21st 2024 Accepted: Aug, 23rd 2024</p>	<p>Objective: This paper advocates for a paradigm shift from the traditional project management to a participatory approach throughout the management cycle, for increased performance of mango farming projects.</p>
<p>Keywords: Participatory Project Managment; Performance of Mango Projects; Effective Management Practices; Sequencing of Project Activities; Feasible Policies and Practices.</p> 	<p>Theoretical Framework: Theories adopted: i. Project Management Theory: Highlights life cycle stages in uncovering new project insights. ii. Stakeholder Theory: Highlights the unity of stakeholders for enhanced involvement in projects. iii. Participation Ladder Theory: Enhances success through active participation. iv. Theory of Constraints: Confronts project challenges related to time, cost, and scope to achieve beneficial changes.</p> <p>Method: The empirical study was carried out in Makeni County, Kenya. It used descriptive cross-sectional design and multistage rsampling on a population of 12,622, out of which a sample of 375 respondnets selected. Of these, 369 questionnaires were returned and analyzed. Additionally, it involved 15 key informants. Observation and an interview guides collected qualitative data. Descriptive and inferential tools, correlation, F-tests, regression and content analysis analyzed quantitative and qualitative data.</p> <p>Results and Discussion: Results reflected item scores showing the composite mean of 3.2 and standard deviation of 3.0. Revealed is a significant positive correlation coefficient ($r = 0.592$), p-value ($p = 0.000$) of the relationship between two variables.</p> <p>Research Implications: This study recommends adopting a participatory project cycle approach, supported by a feasible policy, to guide innovative mango farming practices to enhance the overall performance.</p> <p>Originality/Value: The study contributes to literature by advocating project management cycle approach on performance of mango projects in today’s evolving project environment.</p> <p>Doi: https://doi.org/10.26668/businessreview/2024.v9i9.4976</p>

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MELHORIA DO DESEMPENHO DE PROJETOS DE CULTIVO DE MANGA POR MEIO DA GESTÃO PARTICIPATIVA DE PROJETOS

RESUMO

Objetivo: Este artigo defende uma mudança de paradigma do gerenciamento tradicional de projetos para uma abordagem participativa em todo o ciclo de gerenciamento, a fim de aumentar o desempenho dos projetos de cultivo de manga.

Estrutura Teórica: Teorias adotadas: i. Teoria do gerenciamento de projetos: destaca os estágios do ciclo de vida na descoberta de novos insights sobre o projeto. ii. Teoria das partes interessadas: destaca a unidade das partes interessadas para aumentar o envolvimento nos projetos. iii. Teoria da Escada da Participação: Aumenta o sucesso por meio da participação ativa. iv. Teoria das restrições: Enfrenta os desafios do projeto relacionados a tempo, custo e escopo para obter mudanças benéficas.

Método: O estudo empírico foi realizado no condado de Makueni, no Quênia. Utilizou-se um projeto descritivo de corte transversal e amostragem múltipla em uma população de 12.622 pessoas, da qual foi selecionada uma amostra de 375 respondentes. Desses, 369 questionários foram devolvidos e analisados. Além disso, foram envolvidos 15 informantes-chave. A observação e um guia de entrevista coletaram dados qualitativos. Ferramentas descritivas e inferenciais, correlação, testes F, regressão e análise de conteúdo analisaram dados quantitativos e qualitativos.

Resultados e Discussão: Os resultados refletiram as pontuações dos itens mostrando a média composta de 3,2 e o desvio padrão de 3,0. Revelaram um coeficiente de correlação positivo significativo ($r = 0,592$), valor de p ($p = 0,000$) da relação entre duas variáveis.

Implicações da pesquisa: Este estudo recomenda a adoção de uma abordagem de ciclo de projeto participativo, apoiada por uma política viável, para orientar práticas inovadoras de cultivo de manga a fim de melhorar o desempenho geral.

Originalidade/Valor: O estudo contribui para a literatura ao defender a abordagem do ciclo de gerenciamento de projetos sobre o desempenho dos projetos de manga no atual ambiente de projetos em evolução.

Palavras-chave: Gerenciamento Participativo de Projetos, Desempenho de Projetos de Manga, Práticas Eficazes de Gerenciamento, Sequenciamento de Atividades de Projeto, Políticas e Práticas Viáveis.

MEJORA DEL RENDIMIENTO DE LOS PROYECTOS DE CULTIVO DE MANGO MEDIANTE LA GESTIÓN PARTICIPATIVA DE PROYECTOS

RESUMEN

Objetivo: Este artículo aboga por un cambio de paradigma de la gestión tradicional de proyectos a un enfoque participativo a lo largo de todo el ciclo de gestión, para aumentar el rendimiento de los proyectos de cultivo de mango.

Marco Teórico: Teorías adoptadas: i. Teoría de la gestión de proyectos: Destaca las fases del ciclo de vida para descubrir nuevas perspectivas del proyecto. ii. Teoría de las partes interesadas: Destaca la unidad de las partes interesadas para una mayor participación en los proyectos. iii. Teoría de la escalera de participación: Mejora el éxito mediante la participación activa. iv. Teoría de las limitaciones: Afronta los retos del proyecto relacionados con el tiempo, el coste y el alcance para lograr cambios beneficiosos.

Método: El estudio empírico se llevó a cabo en el condado de Makueni, Kenia. Se utilizó un diseño descriptivo transversal y un muestreo aleatorio multietápico sobre una población de 12.622 personas, de las que se seleccionó una muestra de 375 encuestados. De ellas, se devolvieron y analizaron 369 cuestionarios. Además, se contó con la participación de 15 informantes clave. Los datos cualitativos se recogieron mediante observación y una guía de entrevista. Herramientas descriptivas e inferenciales, correlación, pruebas F, regresión y análisis de contenido analizaron los datos cuantitativos y cualitativos.

Resultados y Discusión: Los resultados reflejaron que las puntuaciones de los ítems mostraron una media compuesta de 3,2 y una desviación estándar de 3,0. Revelado es un coeficiente de correlación positiva significativa ($r = 0,592$), p -valor ($p = 0,000$) de la relación entre dos variables.

Implicaciones de la Investigación: Este estudio recomienda adoptar un enfoque de ciclo de proyecto participativo, apoyado por una política factible, para guiar las prácticas innovadoras de cultivo de mango para mejorar el rendimiento global.

Originalidad/Valor: El estudio contribuye a la literatura al abogar por un enfoque de ciclo de gestión de proyectos sobre el rendimiento de los proyectos de mango en el actual entorno de proyectos en evolución.

Palabras clave: Gestión Participativa de Proyectos, Rendimiento de Proyectos de Mango, Prácticas de Gestión Eficaces, Secuenciación de Actividades de Proyectos, Políticas y Prácticas Viables.

1 INTRODUCTION

Globally and in the African context, the modern project management is in many ways transformed how previously projects were planned, implemented and managed in communities, in public and private sectors. More understanding and information have been communicated a round the globe by Project Management Institute, which was formed in 1969 under collaborative efforts professionals, who provided a structured way forward on the challenges faced in the modern world projects (Weber, 2018). PMI developed the concept idea of project management life cycle, a standalone managerial process consisting of phases or stages that any project can go through from start to finish (PMBOK, 1996; PMBOK Guide 2021).

The mango fruit formed the basis for this empirical research. Previous studies in Makeni had not explored any research through participatory project phasing approach on performance challenges mango farmers faced from mango pre-harvest to post-harvest stages. A previous study conducted ‘choice of marketing channels’ in area found mango fruit had been ‘riddled’ with many problems; and as a result, recommended for further a research to identify the constraints and challenges encountered in the entire mango cultivation chain (Muthini, 2015). In many ways, project challenges usually arise from technical, environmental and human-skill related issues which affect performance, among others. A study found that enforcing policy on mango quality-tandards and identifying the factors that improved participation capacity, increased smallholder mango farmers’ production incomes in retail channels (Ronnie et al., 2014).

In South Africa, a study on agricultural fruit projects of apricots, peaches, and nectarines found that the participatory project management cycle (PPMC), as a project participatory managerial practice enhanced productivity (Hart et al., 2005). It was reported that lack of enough stakeholder participation, and use of an unfamiliar managerial framework, which lacked a clear project direction, resulted in failure to the achieve projected outcomes (Hart et al, 2005). Performance shall be improved by increasing mango production and accessing new markets locally and globally. The projected future demand for mangoes depended on increasing productivity of high-yielding dwarf plants, per tree and per unit land area to maximize yield and income can be based of their genetic analysis (Sankaran et al., 2020). Climate change has affected on mango tree productivity by altering rainfall precipitation patterns in many project environmentsImplementating effective and efficient mango management practices can improve performance in all the mango farms. It has been shown that smallholder farmers stand

to benefit from identifying gap constraints in mango cropping systems, as this knowledge could contribute to improved mango sustainability (Dong et al., 2019).

The mango fruit had become technically difficult for most farmers due to the persistence of susceptible pests and disease infestations that have become hard to contain. This is besides other farm management challenges that require expertise and attention at the farm level. Performance, needs continuous collaboration among various stakeholders, as well as the participation of agricultural extension experts and other professionals, may be required to incorporate new technologies to enhance performance since the mango has become technically difficult to manage by the farmers alone. Some project management life cycles focus on specific project challenges through multiple stages, with each stage aimed at guiding the project towards a guided success (Svoboda et al., 2018). To improve agricultural projects, IFAD implemented an agricultural platform, the Project Management Units (PMUs) to enhance efficiency and performance in farm production (IFAD, 2015).

In this study, participatory project management life investigates its influence on overall mango performance. During postharvest household's income as a resource can be increased by mangoes which are also the sources of raw materials for mango processing industries (Korir et al., 2017). If mango farming projects performance can be enhanced, socio-economic development and the living standards of Makueni County of residents will be improved.

2 THEORETICAL FRAMEWORK

1. Warburton and Cioffi proposed the project management theory in 2014 (Warburton & Cioffi, 2014) as it offers a better understanding of project management on schedules, network structures, and cost over a period of time, through observing the behavior and interconnections that drive them. In this manner, the theory predicts activities and reinforces original ideas advanced earlier by PMI about phasing and preceding iterative sequencing activities.

Unlike the traditional project management, it unravels the underlying issues in a step-by-step sequencing of project phases. The theory guided the study on the mango performance under the insights of activities performed along the project cycle;

2. Stakeholder Theory: known as the father of stakeholder theory in academic circles, Edward Freeman proposed this theory in 1983 (Freeman, 1984). The theory has impact on project or organization stakeholders having a fiduciary duty, with their vested

interests put forth value! The involvement in mango projects foresees the benefits derived and the overall benefits to the farmers, the larger community and the public as a whole;

3. participation Ladder Theory: Sherry Arnstein is the proponent of this theory of 1969 (Arnstein, 1969). It is relevant in this study since it is a community-based planning process for proactive participation of project stakeholders. It vouches for its participatory power through 'the powerful' (participating stakeholders), 'the powerless' (mango farmers, who require stakeholder participation support to improve mango performance);
4. Theory of Constraints (Goldratt, 1990): this theory was proposed by Elihu Moshe Goldratt in 1990. Theory of Constraints (TOC), concerns itself with the scope, cost, and time. In the project triangle concept in the theory, increasing or reducing any side of the triangle affects a project's performance. This is because projects consume human and capital resources and takes the projects through the stipulated timelines depending on its projected scope. And hence efficient use of resources in mango farms has effects on the time factor of the mango project outlay cost and the entire scope.

3 LITERATURE REVIEW

Every other existing project has a starting and finishing point. Feasible and viable projects should meet aspirations of mango farmers, through the participation of professional stakeholders to enhance performance. Many viable projects failed to achieve expected performance due to lack of insufficient participation and training in the current mango farming methods to improve production. In Makueni, mango challenges were experienced from the initial pre-harvest to post-harvest stages. During harvest spoiled mangoes were discarded due to pest infestations. The unnoticed young mango damages experienced during preharvest stage could not be remedied harvest time. The project management cycle can be used for effective planning and communication to improve implementation success (Westland, 2008). In *Setting Project Objectives for Agricultural Projects* for PMI sustainable agricultural programs, emphasis was on partnering with industries to improve agricultural production in the rural sector (Baccarini, 2002).

There was lack of well-researched mango seedlings for the local environment. The exotic mango varieties cultivated were susceptible to fruit fly and other pests which reduced

production. The exotic mango varieties required continuous control of pests and diseases throughout the preharvest and postharvest stages. The project cycle sequencing is designed for enhancing implementation to alleviate impending challenges. Utilizing the sequenced phases of the project cycle can enhance the mango fruit performance. The World Bank developed a project cycle framework, sequenced as project initiation, planning, appraisal, negotiation/approval, and evaluation, to improve its projects efficiency and effectiveness (World Bank, 1972-1978). mango farming projects use a lot of human and capital resources to optimise the overall performance. Preferences for exotic varieties have rendered indigenous mangoes less attractive to most buyers and consumers in the competitive mango markets due to their high fibre content.

The indigenous mangoes could be enhanced to achieve a comparable status to exotic breeds, as they have adapted to the local climate and are more resistant to tropical pests. currently, there is no mango improvement technology available in Makueni, that could make them better than the exotic varieties. More indigenous mango varieties are cultivated for their resilience to drought, tropical diseases, and pests, yet their low economic value leads to them being sold at throwaway prices merely to dispose of them. Local indigenous mango varieties are cultivated primarily for household consumption but are sold at notably low prices due to their high fibre content attracting a low market value. Due decline in mango practices and insufficient improvement efforts as led to low production. If not adequately addressed, the indigenous mangoes may face the risk of extinction within the next few decades to due low mango value because of high fibre content.

Makueni County cultivates exotic mango varieties originally domesticated and adapted for climatic conditions in other countries. This complicates their effective competition alongside other well-researched varieties in the highly competitive global market. It is also important to adapt the exotic varieties to the local environment to improve production by involving agrucutural extension professionals. For marketing purposes, there is a considerable mango deficit in the market during the off-season of Southeast countries, which account for 77% of world mango production, coinciding with Kenya's mango season (FSD Kenya, 2015). Makueni County should harness this natural advantage gap to overcome marketing challenges and improve mango market performance. It is high time Makueni County focused on developing its well-researched breeds of mango varieties adaptable to the local climate, enabling them to compete favourably in both local and global markets with their differentiated mango brands.

Mango farmers in Makueni County face challenges throughout all the stages of mango production, which requires the use of technologies to improve mango growth effectively. Technological Wireless Sensor Network (TWSN) models were implemented in India to support agricultural practices in mango farming, with aim to enhance production (Kodali & Rawat, 2013). Insufficient mango skills and high cost of mango seedlings contribute to low production. These issues are exacerbated by slow adaptation of exotic varieties to the local climate. The absence of a proactive mango cooperative movement which can help farmers new knowledge in production and market contributes to low performance. The Makueni Fruit Processing Plant is not sufficiently engaged in purchasing and processing all mangoes, as middlemen continue to buy mangoes at very low prices. It is incumbent upon the county government to support the mango industry in negotiating better prices collectively through a proactive cooperative movement, since the current small cooperatives are still in their early stages of development.

Most mango farmers do not belong to any cooperative, resulting in them selling their mangoes to any buyer they find at the farm gate and agreeing to whatever price is offered. In India, for example the Konkan region's mango fruit has had a significant economic impact, involving households fully engaged in mango production, distribution, and marketing with a lot of support (Yadav & Pandey, 2016). Mango performance production was reported as moderate in terms of both production and income for farmers due to challenges that reduced yield on farms (Alam et al., 2017). Some of the problems were attributed to the "dearth of infrastructure" and government support in mango cultivation (Purushottam, 2015). India cultivates over 1,300 varieties, among which the Alphonso is renowned as the 'king of mangoes', due to its widespread popularity and high global sales (Purushottam, 2015).

The condition of road infrastructure in mango farming areas contributed to high mango transport costs, thereby affecting farmers' income. The effects of uncontrolled adverse human activities, climate change, global warming, and diminishing forest cover, coupled with the encroachment of riparian ecosystems and the destruction of water catchment areas, have lead to environmental degradation in many mango farming zones. Mango farming, despite facing numerous preharvest and postharvest challenges and uncertainties, holds significant production practices and economic value and importance (Neguse et al., 2019). The success of mango projects' performance relies solely on production and marketing, which can be traced through the iterative process of the project cycle. To enhance performance, monitoring and evaluation are essential for tracking and controlling project deviations effectively (Kyalo et al., 2015).

The outbreaks of mango pre-harvest and post-harvest diseases and pests, which required effective management practices, were not adequately applied. Low mango performance in farming is often due to insufficient finances, technology, and technical know-how, as well as collaboration with mango stakeholders. Currently, many farmers face challenges securing funding for mango inputs because banks impose strict collateral requirements. Many mango farms have failed to meet expected production levels due to uncertainties and challenges faced. A study on the household prosperity of mango farmers shows that mango cultivation is an essential livelihood for mango farmers (Puryantoro & Mayangsari, 2020). As a consequence of profitability trends, smallholder mango farmers had encountered production constraints (Mehjabeen & Saravana, 2020). To minimize wastage and enhance efficiency, it would be advisable to optimally process ripe mangoes near the farms where they are grown.

Training farmers in mango farming is important to impart on technical and managerial skills related to mango cultivation. Many challenges in mango farming can be addressed through proper coordination, participation, and the implementation of good management practices. Many issues contribute to dismal harvests in mango farms, involving both preharvest and future postharvest problems, necessitating research on drought-resistant mango tree rootstocks in relation to local climate and soils. Bringing mango farmers together to address challenges, achieves mango sufficiency and enhances production, while forming partnerships in production can also alleviate challenges. For instance, capacity building competencies, capacity development, and innovation systems in mango production post-harvest could alleviate mango challenges (Laximi et al., 2012).

4 METHOD

The study main objective examined on whether participatory project management enhanced the level performance of mango farming projects in Makueni County, Kenya. The research question was to what level did participatory project management enhance the performance of mango farming projects in Makueni County, Kenya? The study utilized the pragmatism research paradigm as it concurrently uses positivist and interpretivist world-views, and combines the mixed-method approach in the collection and analysing quantitative and qualitative data. Descriptive cross-sectional design and multistage random were also utilized.

The study had a target population (12,622) of mango farmers from which sample size (375) of respondents was determined by the (Krejcie & Morgan, 1970) statistical table for finite

populations. Questionnaires, observation and interviews were instruments of data collection. Out of the 375 questionnaires distributed to the respondents, 369 were returned and analysed. The qualitative data was collected from the mango farmers and the 15 key informants using observation and interview guides. Descriptive and inferential tools of correlation, F-tests, regression and content analysis analyzed quantitative and qualitative data of this empirical study.

5 RESULTS AND DISCUSSIONS

5.1 DEMOGRAPHIC INFORMATION

In this study, a total of 375 questionnaires distributed, 369 were returned, showing a return rate of 98.4%. Information on gender, age, and education indicated majority of mango farmers were male 210 (56.9%) and females 159 (43.1%). The information presents the composition of gender showing more males than females were involved in mango farming. Results on age shows majority were between 41 and 50 years 156 (42.3%) followed by those over 51 years 100 (27.1%). The group between 31 and 40 were 90 (24.3%) and those between 21 to 30 were 15 (4.1%), while those were 18 to 20 were 5 (1.4%). The lowest number being 3 (0.8%) for those under the age of 18. Overall, 93.7% those aged 31 years of age and above, seemed to be well grounded in their mango projects. Among the total 23 (6.3%) of the youth category had started farming of mangoes. For those under 18 were 3 (0.8%), were either in college or had recently completed and were receiving guidance from mentors.

On education results indicated that the majority 202 (54.7%) were of secondary education, while 91 (24.7%) completed primary education. Moreover, 10 (2.7%) had completed diploma and post-secondary education, while 4 (1.1%) completed bachelor degrees, and 3 (0.8%) had PhDs. Overall, most mango farmers education was impressive and suggests they were able to manage mango farming effectively. In this study, the care of the mango tree was found to be technical and required more agricultural extension experts' attention and input to enhance performance, considering the decline in mango production over the years. On mango farming duration majority 170 (46.1%) had 11-15 years of farming, while 122 (43.1%) had between 5-10 years. The lowest percentage consisted of those of 1 to 5 years 10 (2.7%), while those aged 21 to 31 years and above had a percentage of 18.1%. Overall, these results indicated the farmers had a significant experience in mango farming over the years and were able to provide reliable information based on their shared experiences in this empirical study.

5.2 LIKERT SCALE

Table 1 presents participatory project management and performance of mango farming projects. Respondents were presented with the twelve (12) Likert scale items to indicate the level of agreement on performance. From Highest to the lowest shows scale of 1 to 5: SD for strongly disagree, D for disagree, N for neutral, A for agree, and SA for strongly agree, detailed in Table 1.

In this, the independent and dependent variable are examined on: Mango production by farmers, mangoes high-quality standard meeting international standards, supportive agricultural extension services, communication channels, loans to finance mangoes, participate in mango learning groups to improve skills, enough land to grow mangoes, men engaged in mango farming compared to women, Land ownership affectst mango production, mango pests including diseases, mango policies on pricing of mangoes and Mango production lucrative agribusiness. These items examined are shown in details in Table 1.

Table 1

Participatory Project Management and Performance of Mango Farming Projects

No.	Statement	SD	D	N	A	SA	Mean	SD
		F (%)	F (%)	F (%)	F (%)	F (%)		
16a	Mango production is not very good for all mango farmers	40 (10.8)	53 (14.4)	46 (12.5)	52 (14.7)	178 (48.2)	4.1	2.5
16b	All mangoes produced are of high-quality standard and meets international standards	189 (51.2)	107 (29.0)	50 (13.6)	10 (2.7)	13 (3.5)	1.8	1.55
16c	There are no supportive agricultural extension services for mango farmers	86 (23.3)	71 (19.2)	159 (43.0)	33 (8.9)	20 (5.4)	2.9	4.02
16d	There are no good communication channels for all mango meso-actors	42 (11.4)	59 (16.0)	89 (24.1)	79 (21.4)	100 (27.2)	3.6	3.09
16e	Most mango farmers get loans to finance mangoes from banks including micro-financing organizations	129 (35.0)	108 (29.3)	68 (18.4)	40 (10.8)	24 (6.5)	2.4	1.93
16f	Most mango farmers do not participate in mango learning groups to improve on mango technical skills	43 (11.7)	46 (12.5)	102 (27.6)	86 (23.3)	92 (24.9)	3.5	3.90

16g	Most mango farmers have enough land to grow mangoes	89 (24.1)	136 (36.9)	76 (20.6)	34 (9.2)	34 (9.2)	2.4	2.11
16h	Most men are engaged in mango farming compared to women	19 (5.1)	20 (5.4)	72 (19.5)	108 (29.3)	150 (40.6)	3.9	3.60
16i	Land ownership does not affect mango production in this locality	193 (52.3)	38 (10.3)	47 (12.7)	50 (13.6)	47 (12.8)	2.2	2.44
16j	There are limitations in higher mango production brought about by mango pests including diseases	7 (1.9)	8 (2.2)	23 (6.2)	154 (41.7)	177 (49.0)	4.3	3.88
16k	There are no mango policies that benefit the mango farmer in the pricing of mangoes	25 (6.8)	25 (6.8)	50 (13.6)	68 (18.4)	201 (54.5)	4.1	2.65
16l	Mango production is not a lucrative agribusiness for mango farmers	74 (20.1)	85 (23.0)	99 (26.8)	50 (13.8)	61 (16.5)	2.8	3.60
Composite mean and standard deviation							3.2	3.0
n=369								
Composite mean =3.2								
Composite standard deviation=3.0								

Overall, Table 1 results shows a composite mean (M) of 3.2 and a standard deviation of 3.0, showing the results of each item as follows:

Item 16a. This item investigated the opinions of the respondent on mango production and results on majority (48.2%) strongly agreed not all mango farmers were skilled and that mango production was not very good. This item's mean was 4.1 and standard deviation of 2.5, it indicated agreement, as mean exceeded composite mean, implying low mango performance. Key informant's reported while some farmers seemed to have better level of mango production performance, mangoes faced persistent challenges along pre-harvest and post-harvest stages which resulted in reduced production. One farmer view during interviews who stated,

‘The exotic varieties of mangoes have proved more demanding in care due to their susceptibility to pests and diseases throughout pre-harvest and post-harvest stages of mango production, they have become difficult to cultivate and costly to manage over the years’. The results agree with those of Muthini (2015), who reported that Makeni mangoes were ‘riddled with many problems’.

Item 16b. Sought opinion of whether all mangoes produced were of high-quality and met international standards. The majority (51.2%) strongly disagreed, posting a mean of 1.8

and SD of 1.6. A lower mean than composite suggested that not all mangoes quality met international standards. The findings align with one farmers during the interviews that:

“We produce also produce local indigenous mangoes which are basically cultivated for households’ consumption and sold for some income at throwaway, very low prices because of their high fibre content and low market value”.

These results align with (Muthini, 2015) assertion that the preference for modern exotic varieties has diminished the appeal of indigenous mangoes to most consumers. However, potential exists to enhance indigenous mangoes to achieve comparable, if not superior, status, given their greater resistance to pests and better adaptation to local climates.

Item 16c. The item examined opinion there are no supportive agricultural extension services for mango farmers. The majority (43%) disagreed, with the mean being 2.9 and Standard Deviation (4.02). The item Mean was more composite, suggesting that agricultural extension services level of performance was mid-way. With regard to the presence of supportive agricultural extention services for mango farmers, respondents reported that it was nearly average. Although there was still some support the farmers experienced reduced mango production which may explain the policies were not in place or were not fully followed. FAO (2015) reported farmers in developing countries faced challenges related to limited access to quality agricultural extension services and markets.

Item 16d. The item examined opinions on communication channels to various mango stakeholders. On this statement, majority (27.2%) strongly agreed, with mean result of 3.6 and SD of 3.09, suggested that majority of the respondents were undecided, implying fair communication channels on the level of performance.

Item 16e. investigated on whether most mango farmers got loans to finance mango farming. The majority (35%) disagreed strongly, with a mean (2.4) and Standard Deviation (3.09), imlying few got loans. The reason may imply stringent loan collaterals mango farmers needed to meet and might explain the low level of performance because the item mean was less than the composite mean. One of the key informants reported scarcity of loan facilities for mango farmers. One farmer had similar views stating, “There is lack of enough mango loan facilities as well as high cost of mango seedlings, exacerbated by long maturity timelines and long adaptability of exotic varieties to the local climate”.

Item 16f. examined perspeptions on whether most mango farmers did not participate in mango learning groups to improve their mango technical skills. The majority (24.9%) strongly agreed, Mean was 3.5 and Standard Deviation of 3.9, indicating a medium level of participation.

Since composite mean was higher than mean, h implied participation on the level of performance in mango learning groups was not high.

Item 16g. Examined opinions on whether most had enough land to grow mangoes. Majority (36.9%) strongly disagreed with the statement because of a Mean of 2.4 and a standard deviation 2.11 implying the level of performance was low.

This supports a view said,

“Most farmers do not have enough land for their farming and this has affected the number of mango trees the farmers are able to plant since they also have other crops which they grow, hence this is a major challenge”.

Item 16h. the statement examined on whether most men were engaged in mango farming compared to women. the statement most men were engaged in mango farming compared to women. The majority strongly (40.6%) agreed with the statement posting a mean (3.9) and a SD (3.6). Mean being more than composite mean implied more men than women were engaged in mango farming.

Item 16i. the statement anted to establish whether land ownership did not affect mango production. The majority of 52.3% strongly disagreed because the item had a mean (2.2), and is SD (2.44). The Mean being less than the Composite Mean, indicated land ownership indeed affected the level of mango performance in the area.

Item 16j. examined limitations opinions on higher mango production brought about by pests and diseases. Majority (49%) strongly agreed, with the item yielding 4.3 mean and SD of 3.88. This implies that pests and diseases significantly affected the level of mango performance. These findings agreed with a response of one farmer who stated:

“Besides land and financial challenges, mango farming is hindered by numerous pests and diseases, and the pesticides have been so expensive. This reduces yield in the long run”.

Item 16k. investigated the opinions that there are no mango policies that benefit the mango farmer in the pricing of mangoes. The majority (54.6%) strongly agreed, mean of 4.1 and SD of 3.6, suggested a more than 50% level of performance implying the level was not at its best. This is because the nean was more than composite mean, suggesting that mango policies moderately affected the level of performance. It can be argued on that, although there were to some extend mangoes policies in place as the respondents agreed, they might not have been followed or they were not fully implemented.

Item 16l. examined the opinion tha mango production was not a lucrative agribusiness for mango farmers. Results indicated 26.8% showing a reduced level of level of performance

on production of mangoes. Given that mean was 2.8 and SD of 3.6 based on this data, it is evident the item did not show improved level of performance. And hence mango production was not that lucrative as an agribusiness venture for most mango farmers.

Overall, the item statements paint a picture of low to medium level of performance. This means that a lot is needed to enhance the level of performance.

5.3 CORRELATION BETWEEN PARTICIPATORY PROJECT MANAGEMENT AND PERFORMANCE OF MANGO FARMING PROJECTS

The Pearson's correlation coefficient determined the relationship between Participatory Project Management and Performance of Mango Farming Projects.

Hypothesis Testing H₀₁: hypothesis stated: there is no significant relationship between the participatory Project management and performance of mango farming projects in Makueni County, Kenya. Pearson's correlation tested the hypothesis and he results are presented in Table 2.

Table 2

Correlation Analysis Between Participatory Project Management and Performance of Mango Farming Projects

		Participatory Project Management	Performance of Mango Farming Projects
Participatory Project Management	Pearson Correlation	1	.592(**)
	Sig. (2-tailed)		.000
	N	369	369
Performance of Mango Farming Projects	Pearson Correlation	.592(**)	1
	Sig. (2-tailed)	.000	
	N	369	369

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

Results in Table 2 shows significant positive correlation between Participatory Project Management and Performance of Mango Farming Projects to be ($r=0.592$, $p=0.000$). This indicated there was a significant relationship between Participatory and Perfomance, leading to the rejection of the null hypothesis.

5.4 REGRESSION ANALYSIS BETWEEN PARTICIPATORY PROJECT MANAGEMENT CYCLE AND MANGO PERFORMANCE

About the Statistical Regression Model:

The original regression model formula in advanced statistical methods is universally denoted by the equation: $Y = \alpha + \beta X + \epsilon$. the *dependent variable* is Performance and Participatory Project Management is the *independent variable*, hence the regression model: $Y = \alpha + \beta^0 X^1$

$$Y = \alpha + \beta^0 X^1 + \epsilon. \quad (1)$$

The Model: $Y = f(X^1, \epsilon)$.

where:

$Y = \alpha + \beta X + \epsilon$, is the regression equation.

Y = Performance of Mango is the dependent variable.

α = constant term

β = Beta is the coefficient of X

X = Independent variable (X), Participatory Project Management, predictor.

ϵ = stochastic random error term.

Table 3

Regression Analysis Between Participatory Project Management and Performance Mango Farming projects

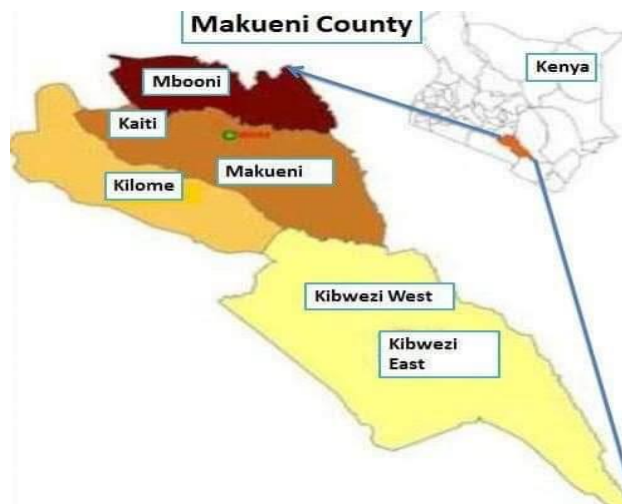
Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.211(a)	.066	.052	11.22		
ANOVA (b)						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	31.33	2	32.43	11.22	.000(a)
	Residual	18.12	367	31.12		
	Total	49.45	369			
Coefficients (a)						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	3.58	3.137		11.78	.000
	Participatory project managment (X ₁)	1.33	.421	.3511	5.521	.000

a. Dependent Variable: performance of mango farming projects b. Participatory Project management.

In Table 3, shows a positive correlation coefficient $r = 0.3511$ of relationship between mango performance and participatory management. These Anova results indicated that with the $DF = (2,367)$, $F = 11.22$, $t = 5.521$, $P = 0.000 < 0.05$, $r = 0.211$, and $R^2 = 0.066$ the model is statistically significant. Beta value being 0.3511, translates into 35.11% of the variations on mango performance explained by participatory project management.

Figure 1

Makueni County in Kenya where the study was conducted



Source: Musyoka and Mutia (2016).

6 CONCLUSION

The study established that participatory project management enhanced the performance. There was need to embrace current mango farming practices since the tree had become technically difficult to manage for most mango farmers. Continuous participation of agricultural extension professional and other stakeholders involved in mango production can contribute a lot towards improved performance. Equipping mango farmers with pests and diseases monitoring skills on the best practices could go a long way to enhancing performance. From the observations and interviews conducted, it became evident that there was insufficient support to mango production. Lack of quality researched mango seedlings and insufficient resources greatly contributed to reduced production leading low harvest. Regular observations to identify potential challenges in mango tree growth, monitoring fruit quality and quantity, and detecting the onset of pests and diseases early is worthwhile. Furthermore, it was found that enhancing performance starts early during nursery seedling care.

Establishing of a dynamic mango cooperative movement by both levels of government can improve production and markets. Mango farmers and other stakeholders should consistently embrace active participation as an essential intervention for enhanced mango performance, considering the many challenges inherent in mango farming.

6.1 RECOMMENDATIONS OF THE STUDY FOR POLICY AND PRACTICE

The recommendations here are made for policy and practice, based on the study findings. In the study area, continuous participatory project management should be adopted for policy and practice to enhance mango performance. A proactive mango policy should be crafted and implemented together with mango farmers and agricultural extension professionals. A concerted effort to mitigate climate change and global warming in mango farms is timely. Adoption of smart regenerative agriculture can alleviate climate changes by using mango trees as carbon sequestration sinks in the volatile mango production environments. This research proposes further actions that:

1. the national and county governments should align and merge their policy decisions to enhance production by supporting and facilitating mango farmers with farm inputs;
2. the study found inadequate support and facilitation of agricultural extension services by registering all mango farmers to ensure regular follow-up within specified timely intervals;
3. from the finding, it was evident mango farmers had limited training and in this the County government should develop specific mango training programs and certification to improve mango farmers skills for enhanced mango performance.

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