

Challenges Facing Smallholder Farmers in Decision-Making in Innovative Agricultural Development in Semi-Arid Areas of Eastern Kenya

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Background and Justification

- In many developing countries, the agricultural sector is organised along demand-driven production chains in both local and global competitive markets (Augustine *et al.*, 2013; Klerkx & Leeuwis , 2008).
- Despite considerable advances in technology, declining agricultural productivity among smallholder farmers in Africa remains a major bottleneck to the continent's agricultural sector development (Adejobi & Kassali, 2013).
- Poorly functioning agricultural value chains in Sub-Saharan Africa can be effectively improved through public-private-based partnership (PPP) linkages.
- ☞ Such linkages can be used to strengthen stakeholders' individual and collective capacities to innovate and improve organizational cultures and behaviours.

Background and Justification Cont'd...

- Additionally, innovation platforms and intermediaries help entrepreneurs cope with emerging agricultural challenges such as the articulation of the multi-stakeholders' innovation needs.
 - ☞ Such innovation platforms therefore need a flexible attitude and process skills in the navigation of their dynamics (Buchanan *et al.*, 2013).
- The agricultural sector's growth and development is influenced by complex interactions among the PPP actors (Faria *et al.*, 2010).
 - ☞ This is coupled with rapidly changing market and policy regimes that affect knowledge and information flows, technological opportunities and innovation processes.
- The semi-arid areas of lower Eastern Kenya cover the three semi-arid Counties of Kitui, Machakos and Makueni.
 - ☞ The region is characterised by poor infrastructure, low, erratic and poorly distributed rainfall (Kavoi *et al.*, 2013).

Background and Justification Cont'd...

- Development agencies in the region have promoted improved technologies and innovations to help improve farm productivity and household income of the resource-poor smallholder farmers.
- Over the last three decades, development partners involved in PPP joint development initiatives in the region have used different approaches to promote improved technologies and innovations to improve farm productivity (Kavoi *et al.*, 2011).
 - ☞ Their efforts have, however, been done with limited documented information why improved technologies and innovations have not helped resource-poor farmers to move out of poverty as observed in other parts of Kenya by Wang'ombe and van Dijk (2013).
- The focus of the study was to determine and analyse factors related to challenges that smallholder farmers in semi-arid lower Eastern Kenya face in decision-making in the uptake of improved technologies and innovations to improve farm productivity for improved food security.

Background and Justification Cont'd...

- Technologies and innovations developed through Multi-stakeholder processes generally drive the agricultural sector's profitability, productivity and sustainability.
- ☞ Meaningful innovative agricultural development particularly in the semi-arid areas requires effective stakeholders' joint efforts to develop and promote improved technologies for wider adoption.
- Resource-poor smallholder farmers in semi-arid lower Eastern Kenya operate in an environment with poor infrastructure, low, erratic and poorly distributed rainfall.
- ☞ These challenges make it necessary to involve farmers in sustainable development activities through public-private-partnership (PPP) development initiatives.
- ☞ Evidence of increased adoption of improved technologies in the region remains substantially inadequate.
- There has been inadequate understanding and poor documentation of factors related to choices that resource-poor smallholder farmers face in decision-making to improve their farm productivity, hence the study.

Purpose and Objectives of the Study

➤ This study sought to :

☞ Determine the factors related to challenges in decision-making among smallholder farmers in semi-arid lower Eastern Kenya in the promotion and uptake of improved technologies and innovations to improve farm productivity for improved food security.

➤ The specific objectives of the study were to: -

➤ Identify and describe improved technologies that have been promoted for diffusion and wider adoption to improve farm productivity and food security in the semi-arid areas of lower Eastern Kenya.

➤ Identify and describe challenges related to choices smallholder farmers make in technology and innovation adoption to improve farm productivity in the semi-arid areas of lower Eastern Kenya.

➤ Develop recommendations for enhancing smallholder farmer's choices for increased technology and innovations adoption to improve farm productivity and food security in the semi-arid areas of lower Eastern Kenya.

Materials and Methods

- The researchers used structured Key Informant interviews and Focus Group Discussions (FGDs) to both qualitative and quantitative data from 34 Key Informants (KIs) (**purposively sampled from County MoA & NGOs subject matter specialists**) and 5 FGDs (**55 participants – sampled from farmer groups involved in past PPP development initiatives in the region**).
- ☞ To triangulate the qualitative data collected during the KI structured interviews, each KI respondent completed a structured self-administered questionnaire with a five-point Likert scale.
- Where responses were ranked, the researchers transformed the ranked data into scores for ease of determining the highest and lowest ranked responses.
- ☞ The following scores were adopted in descending order of importance:
Rank 1, score 5; Rank 2, score 4; Rank 3, score 3; Rank 4, score 2; Rank 5, score 1 as recommended by Abeyasekera (2001) and Gido *et al.* (2013).
- ☞ System missing values were given a score **of zero** - to avoid generating incorrect means of the summated scores.

Results and Discussions

- The *first objective* sought to identify and describe the improved technologies that have been promoted through PPP joint initiatives for adoption for improved food security in the semi-arid areas of lower Eastern Kenya.
- Findings showed that several improved technologies have been introduced in the study area.
 - ☞ These included Cotton, sunflower, castor, dairy goats, cassava and Gadam sorghum commercialization.
 - ☞ They also showed that efforts made to promote improved technologies for wider diffusion and increased adoption did not result in increased uptake of technologies.
 - ☞ However, the inhabitants of the region still remain food insecure.

Results and Discussions Cont'd.....

- With a guaranteed market and better farm-gate price, it was hoped that the Gadam sorghum PPP initiative would increase production and marketing of the sorghum grain from the region.
- ☞ However, just like other past PPP initiatives, production and tonnage from the region picked up during the first two years of its inception.
- ☞ Tonnage from the region reduced during the third year of production (**Fig. 1**).

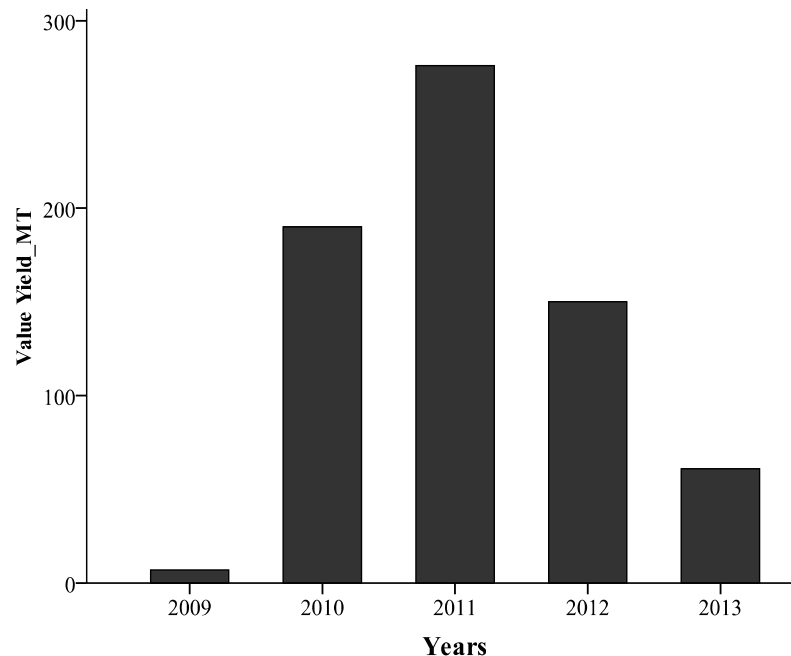


Figure 1. Gadam sorghum production in the six Sub-Counties (Metric Tones)



Plate 1: Well filled head of Gadam sorghum; Launching of the first batch of Lorries (Mwingi town, Kitui County) to transport Gadam sorghum grain to EAML

Results and Discussions Cont'd.....

➤ The *second objective* sought to identify and describe factors related to choices farmers make in technology and innovation adoption in the semi-arid areas of lower Eastern Kenya.

☞ Table 1 presents findings from KIs on factors related to poor performance of past PPP initiatives in the promotion and adoption of improved technologies.

Table 1

Key Informants' Perceived Causes for Poor Performance of Past Joint Public-Private-Partnership initiatives in the Semi-Arid Areas of Kitui, Machakos and Makueni Counties (n=34)

Cause	Summated Score	Mean	Std. Dev	Rank
Promoting technologies that do not address farmers' immediate needs and also with limited utilization options	113	3.32	1.628	1
Low farm-gate prices coupled with distorted and unreliable markets	112	3.29	1.835	2
Lack of joint planning and implementation of the planned activities	84	2.47	2.178	3
Uncoordinated PM&E farm visits coupled with conflict of interests	68	2.00	1.688	4
Lack of openness among stakeholders coupled with broken promises and group dynamics	62	1.82	1.696	5

Results and Discussions Cont'd.....

- **Findings from Key Informants indicated their dissatisfaction with promotion of new technologies and innovations without first analysing immediate farmers' operating circumstances and matching the same with available technologies and innovations.**
- ☞ **Lack of joint planning and implementation of planned activities; low farm-gate prices coupled with unreliable markets have largely contributed to poor performance of past joint PPP initiatives in the target area.**
- ☞ **Uncoordinated participatory monitoring and evaluation (PM&E), farm visits and conflict of interests among development partners though ranked fourth had partly contributed to the less than optimal performance of past PPP joint initiatives.**

Results and Discussions Cont'd.....

 **Table 2 presents the findings from the FGDs.**

Table 2

FGDs Respondents' Perceived Causes for Less than Optimal Performance of Past Joint Public-Private-Partnership initiatives in the Semi-Arid Areas of Kitui, Machakos and Makueni Counties (n=5)

Cause	Summated Score	Mean	Std. Dev	Rank
Need for quick money to meet urgent/ pressing family needs for cash	17	3.40	2.302	1
Weak linkages coupled with lack of transparency among development partners	13	2.60	1.517	2
Low farm-gate prices coupled with broken promises	12	2.40	1.817	3
Unreliable or distorted markets	10	2.00	1.581	4
Lack of clearly defined roles of different development partners	8	1.60	2.191	5

Results and Discussions Cont'd.....

- In summary, study findings under objective two showed that:
- Past PPP joint initiatives promoted technologies with limited utilization options.
- Low farm-gate and market prices coupled with unreliable markets for such technologies contributed to low uptake of the same.
- Additionally, farmers faced challenges in decision-making when choosing between technologies with limited utilization options and their current practices.
- Moreover, technologies with limited utilization options were out-competed by other food crops for the available cropping land.

Results and Discussions Cont'd.....

- The *third objective* sought to develop recommendations for enhancing smallholder farmer's choices for increased adoption of technologies and innovations in the target area.
- 21% of the KI respondents were aware of past recommendation - that value addition at farm level was crucial in contributing to increased adoption of improved technologies and innovations.
- The researchers sought to establish how resource-poor smallholder farmers could effectively make informed choices on the uptake of available improved technologies and innovations in the target area.
- Study findings from KIs are presented in a multi-response Table 3.

Results and Discussions Cont'd.....

Table 3

Key Informants' Suggestions on how to Improve the Uptake of Improved technologies and Innovations in the Target Area (n=34)

Suggestion	Frequency	percent	Rank
Promoting technologies that address farmers' immediate needs/ with many utilization options	26	76	1
Analyse the circumstances under which farmers are operating before introducing and technologies	22	65	2
Improve farm-gate and market prices coupled with reliable markets	21	62	3
Address the issue of middle men who exploit the farmers	20	59	4
Promote openness among stakeholders	18	53	5

Results and Discussions Cont'd.....

- Study findings agreed with earlier studies by Narrod *et al.* (2009) and Okoko *et al.* (2008) that development partners need to embrace value addition especially at farm level to increase utilization of improved technologies.
- Of the total KIs, 66% said that development partners should promote technologies that address farmers' family immediate needs such as school fees, health and food.
- Past improved technologies fell short of addressing farmers' immediate pressing needs.
- Development partners promoted technologies without analysing the circumstances farmers were operating under.
- A combination of low farm-gate and market prices, middlemen exploitation and lack of openness among development partners contributed to low farmers' uptake of improved technologies in the target area.

Conclusions

Based on the findings of the study, the researchers concluded as follows:

- Past PPP joint initiatives have been carried to promote improved technologies in the target area.
 - Although several improved technologies have been promoted in the target area, uptake of the same has been low. Food insecurity in the semi-arid lower Eastern Kenya still persists among the inhabitants in the region.
 - Additionally, promotion of technologies with limited utilization options seemed to have greatly contributed to low adoption of the same among resource-poor farmers in semi-arid lower Eastern Kenya.
- ☞ As a result, resource-poor farmers opted to grow food crops with wider range of utilization options.

Conclusions Cont'd....

- Thus, technologies and innovations with a wider range of utilization options stood a better chance of adoption among the resource-poor farmers in the target area.
- Furthermore, resource-poor farmers prefer improved technologies and innovations that address their immediate pressing family needs.
 - ☞ As such, analysis of farmers' operating circumstances by development partners before introduction and promotion of improved technologies and innovations is crucial.
- Improved farm-gate and market prices, minimal farmer exploitation by middlemen as well as trust among development partners can greatly contribute to improved technologies and innovations among resource-poor farmers in the semi-arid lower Eastern Kenya.

Recommendations

- Leaders in the target area should use the existing partnership to promote improved technologies and innovations for wider adoption.
- Stakeholders should put strategies in place to help accelerate wider adoption in the semi-arid lower Eastern Kenya.
- Development partners should promote technologies with a wide range of utilization options to enhance increased uptake of the same among resource-poor farmers in semi-arid lower Eastern Kenya.
- Since technologies and innovations with a wider range of utilization options had better change of adoption in the target area, development partners should promote the concept of agricultural product value chain to achieve increased uptake of technologies and innovations that are promoted.

Recommendations Cont'd.....

- To effectively address food insecurity in the target area, development partners should endeavour to promote technologies and innovations that address family pressing needs such as school fees, health and family food.
- Stakeholders should analyse farmers' operating circumstances and match them with the available improved technologies and innovations that are being promoted in the area.
- To address issues of low farm-gate, market prices and farmer exploitation by middlemen, all stakeholders should jointly put strategies in place to address the same. Stakeholders should also put structures in place that could facilitate establishment of sustainable linkages with key service providers.

*Thank you all
for listening*