Small-Scale Farmers' Awareness of Devolved Public Agricultural Extension Services in Bomet East Sub-County, Bomet County, Kenya

[1]Milly Chepkemoi, [2]Prof. Joash K. Kibett (PhD)[3] Dr. Naomi Rioba (PhD)

[1],[2],[3] Department of Agricultural Biosystems, Economics and Horticulture, University of Kabianga, Kenya, P.O. Box 2030-20200, Kericho, Kenya.

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ABSTRACT

Devolution transferred responsibility for public agricultural extension services to county governments in Kenya, with the expectation that decentralization would bring services closer to farmers and improve accountability. Yet the extent to which small-scale farmers are aware of these devolved services, an important precondition for utilization, remains poorly documented, particularly in Bomet East Sub-County. This study assessed the level of awareness of small-scale farmers of the existence and roles of devolved public agricultural extension services, and examined its association with farmers' perceived outcomes of the services. A descriptive research design nested within a cross-sectional survey was employed. Using a multistage sampling procedure combining purposive, stratified, and snowball techniques, 395 small-scale farmers were sampled from Bomet East Sub-County, alongside all five agricultural extension officers serving the sub-county, who were engaged as key informants. Data were collected using structured interview schedules and analyzed using descriptive statistics, thematic analysis, and a chi-square test of independence. Farmers reported a moderate-to-high overall level of awareness of devolved extension services (mean = 3.61 out of 5 on a Likert scale); they were most aware of the roles played by extension officers (mean = 3.76) but least confident in knowing how to access services when needed (mean = 3.46). Key informant accounts corroborated this pattern, noting that while awareness of the existence of services was fairly widespread, understanding of specific programmes and access channels remained limited. A chi-square test confirmed a statistically significant association between awareness and farmers' perceived outcomes of extension services ($\chi^2 = 32.71$, df = 1, $p < .001$, Cramer's V = 0.288). County agricultural departments should strengthen awareness campaigns that move beyond informing farmers that services exist toward explicitly demonstrating how these services can be accessed.

Key words: Devolution, agricultural extension, awareness, small-scale farmers, Bomet County, Kenya

INTRODUCTION

Agricultural extension is widely recognized as a critical catalyst for rural development, technology transfer, and food security, yet public extension systems in many developing countries have historically been characterized by centralized bureaucracies, inadequate funding, and poor responsiveness to local socio-economic conditions (Norton & Alwang, 2020). To address these inefficiencies, several countries have pursued decentralization of agricultural extension on the assumption that bringing decision-making and service delivery closer to farmers enhances accountability, relevance, and uptake of innovations.

In Kenya, agricultural extension was managed centrally by the national government prior to 2010, a system marked by chronic underfunding and standardized messages that rarely addressed diverse local needs. The Constitution of Kenya 2010 devolved agriculture, including extension services, to 47 county governments, with devolution expected to improve service delivery through localized planning, recruitment of staff, and allocation of resources based on county-specific priorities (Muwonge, Owuor, Williamson, & Kinuthia, 2022). Empirical studies in counties such as Kericho and Kitui indicate that devolution has altered the management and organization of extension services, with implications for staffing, financing, and

coordination (Keino, Kibett, & Kere, 2022; Kyambo, 2023). Comparable experiences from other countries, such as Nepal, similarly demonstrate that devolved extension systems hold potential for improved responsiveness but also introduce new coordination and capacity challenges (Burlakoti & Nettle, 2024). Decentralization processes can also generate accountability tensions between national and local levels of government, affecting the consistency of extension delivery, as observed in Tanzania (Lameck & Hulst, 2021).

Awareness is a foundational precondition for the utilization of any devolved service: farmers cannot engage meaningfully with extension programmes, or hold service providers accountable, if they do not know that such programmes exist or understand the roles that extension officers are meant to play (Wanjiku, Jonyo, & Alwanga, 2020). In Kenya, agricultural extension services have historically been constrained by inadequate financing, limited human capacity, and uneven adoption of ICT-based approaches to reach farmers with information, despite the demonstrated potential of such approaches to enhance productivity and welfare (Kathula, 2023; Khatri et al., 2024; Marwa, Mburu, Oburu, Mwai, & Kahumbu, 2020; Kieti, 2022). Much of the existing literature on devolved extension in Kenya evaluates outcomes through administrative or productivity indicators, with comparatively limited attention paid to whether the intended beneficiaries are even aware that devolved services exist and how they are meant to function.

Bomet County presents an important case for examining this question. The county's economy is over 85% agriculture-based, and Bomet East Sub-County is predominantly rural, with small-scale farmers forming the majority of producers. Despite substantial county budgetary allocations to agriculture, county assembly reports and stakeholder forums continue to cite complaints of reduced farm visits and declining farmer field days. Whether these gaps reflect low farmer awareness of the devolved system, weak service delivery, or both, is not well established. This study, therefore, sought to assess the level of awareness of small-scale farmers of the existence and roles of devolved public agricultural extension services in Bomet East Sub-County, and to examine whether this awareness is significantly associated with farmers' perceived outcomes of the services.

Globally, research indicates that farmer awareness strongly influences the adoption of new agricultural technologies and practices; farmers who are aware of available extension services are more likely to adopt improved technologies (Pathak, 2020), and administrative decentralization of rural development programmes requires that local stakeholders understand the roles of service providers in order to achieve intended outcomes (Rondinelli, 2022; Sivayoganathan, 2020). In Asia, top-down extension systems have been found to fail to transmit critical information effectively to local farmers, limiting awareness and, consequently, the adoption of recommended practices (Liao, Ross, Jones, & Palaniappan, 2024), while communication gaps and organizational inefficiencies have been shown to reduce farmers' understanding of extension services elsewhere (Ashraf & Hassan, 2021; Lameck & Hulst, 2020). Evidence from Africa shows similar patterns: farmers' willingness to pay for extension services is closely linked to their understanding of service roles and expected benefits (Abed, Sseguya, Flock, Mruma, & Mwango, 2020), farmers draw awareness from multiple, sometimes informal, channels rather than extension offices alone (Manteaw, Folitse, Mahama, & Wahaga, 2023), and perceptions of service effectiveness are strongly associated with farmers' knowledge of extension mandates (Maake & Antwi, 2022). In Kenya specifically, education, access to information, and local networks have been found to shape farmers' understanding of devolved extension responsibilities (Kyambo, Kilungo, & Amwata, 2021), knowledge management practices have been linked to farmer awareness (Cheruiyot, Sang, & Ng'etich, 2020), and awareness has been linked to farmer empowerment and participation in agricultural programmes (Mwololo, Nzuma, & Githinji, 2022).

RESEARCH METHODOLOGY

Study Design

The study adopted a descriptive research design nested within a cross-sectional survey design, within an integrated mixed-methods approach combining quantitative and qualitative techniques. The descriptive design allowed for the systematic collection, analysis, and presentation of information on farmers'

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awareness of devolved public agricultural extension services without manipulating any variables, while the cross-sectional survey enabled data to be collected from small-scale farmers at one point in time.

Location of study

The study was undertaken in Bomet East Sub-County, Bomet County, which borders Kericho, Narok, Nyamira, and Nakuru counties (Figure 1). Bomet County covers approximately 2,037.4 km², of which about 1,716.6 km² is arable land, and is administratively divided into five sub-counties: Sotik, Chepalungu, Bomet East, Bomet Central, and Konoin. Bomet East Sub-County has a population of 150,436 and was selected because it is predominantly rural, with agriculture as the main economic activity and small-scale farmers forming the majority of producers, making it a strategic location for assessing farmers' awareness of devolved public agricultural extension services.

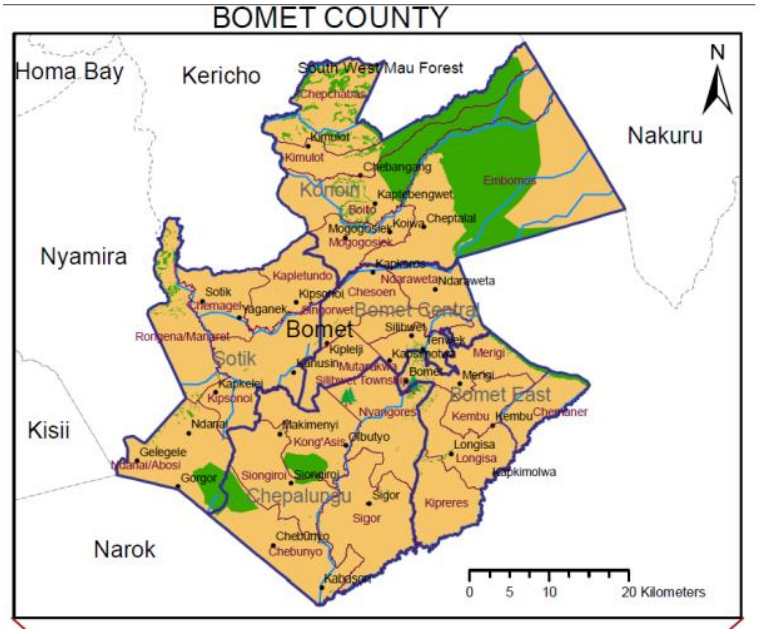


Figure 1: Map of Bomet County showing the study location

(Source: Bomet County Agriculture Office)

Target Population and Sampling

The target population comprised 29,958 small-scale farmers in Bomet East Sub-County and the five agricultural extension officers serving the sub-county. The sample size of small-scale farmers was determined using Yamane's (1967) formula at a 95% confidence level and 0.05 margin of error, yielding a sample of 395 farmers. All five extension officers took part in the study as key informants.

A multi-stage sampling procedure was employed. Bomet East Sub-County was purposively selected for its predominantly rural setting and high concentration of small-scale farmers. The sub-county was stratified into its five administrative wards, from which one ward was selected using simple random sampling. Within the selected ward, one location, one sub-location, and finally two villages were successively selected using simple random sampling. A stratified proportional random technique was used to determine the number of farmers to be sampled from each village, and snowball sampling was then used to identify and select the 395 individual respondents. The five extension officers were selected through purposive sampling due to their direct involvement in the planning and delivery of extension services in the sub-county.

Data Collection Instruments

Data were collected using two structured interview schedules: one administered to small-scale farmers and another to the extension officers. Awareness was assessed using four Likert-scale statements (1 = extremely unaware to 5 = extremely aware) covering farmers' knowledge of the existence of devolved services, their understanding of the roles of extension officers, their awareness of specific programmes offered, and their

knowledge of how to access services when needed. Content and face validity of the questionnaire were established through review by two experts from the Department of Agricultural Biosystems, Economics and Horticulture, University of Kabianga (Mugenda & Mugenda, 2003). Reliability was assessed through a pilot study among 30 small-scale farmers in Bomet Central Sub-County, with internal consistency measured using Cronbach's alpha; the awareness construct returned a coefficient of 0.676, above the 0.60 acceptability threshold.

Data Analysis

Quantitative data on farmers' awareness were analyzed using descriptive statistics, namely frequencies, percentages, means, and standard deviations. To test whether awareness was significantly associated with farmers' overall perceived outcomes of devolved extension services, awareness and perceived-outcome scores were each split at their sample median into 'Low' and 'High' categories, and the resulting 2 × 2 contingency table was analyzed using a chi-square test of independence at the $\alpha = 0.05$ level of significance, with Cramer's V reported as a measure of the strength of association. Qualitative data from the key informant interviews with extension officers were transcribed verbatim and analyzed thematically, with themes generated around farmers' awareness and its practical implications for service utilization.

RESULTS AND DISCUSSION

Response Rate and Respondent Profile

Of the 395 farmers targeted, 393 interviews were completed and found suitable for analysis after data cleaning, yielding a response rate of 99.5%. Four of the five extension officers targeted as key informants completed and returned their interview schedules, representing an 80% response rate for the qualitative component. Respondents had a mean age of 35.9 years and were predominantly female (73.5%). Half of the respondents (50.1%) had attained tertiary-level education, 31.0% had secondary education, and 18.1% had only primary education. Respondents had, on average, 8.6 years of farming experience and operated farms averaging 2.78 acres, consistent with the small-scale farming profile targeted by the study. This relatively high education profile suggests that most respondents were well placed to understand extension messages, which may partly explain the moderate-to-high awareness levels reported below.

Level of Awareness of Devolved Public Agricultural Extension Services

The first objective sought to assess the level of awareness of small-scale farmers of the existence and roles of devolved public agricultural extension services. Respondents rated four statements relating to their awareness on a 1-5 Likert-type scale, where 1 was extremely unaware and 5 was extremely aware. The results are presented in Table 1.

Table 1: Farmers' Awareness of Existence of Devolved Public Agricultural Extension Services

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	SD
Aware of the existence of public agricultural extension services	0	24.7	15.3	44.8	15.3	3.51	1.03
Understand the roles of extension officers	0	13.5	22.9	37.9	25.7	3.76	0.98
Aware of specific programmes offered by extension services	0	12.5	29.5	33.8	24.2	3.7	0.97
Know how to access extension services when needed	8.4	18.6	16.3	32.1	24.7	3.46	1.27
Average						**3.61**	**1.06**

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Table 1 shows that respondents were generally aware of the existence of the devolved public agricultural extension system, with a mean score of 3.51, and were even more aware of the roles of extension officers, with a mean score of 3.76, the highest-rated item. Awareness of specific programmes offered by extension services was similarly high (mean = 3.70). Farmers had a comparatively lower level of awareness of how to access devolved services when needed (mean = 3.46, SD = 1.27, the largest spread of any item), indicating that while farmers generally knew that services existed and what extension officers were meant to do, gaps remained in the practical, access-oriented dimension of awareness. The overall composite mean of 3.61 places farmers' awareness within the 'aware' category on the scale used.

The four extension officers interviewed as key informants offered a broadly consistent, though more critical, picture of farmer awareness than the farmer survey alone suggests. All four agreed that awareness of devolved extension services exists among small-scale farmers but is uneven and, in most cases, moderate to low rather than high. One officer observed that farmers were generally aware that extension services exist but remained unaware of specific programmes such as value addition, pest and disease management, and market linkage, while another noted that farmers often fail to differentiate between nationally coordinated and devolved extension functions, which limits their ability to identify and seek out the correct service channel. A recurring theme across the informants was that awareness does not translate directly into utilization; officers consistently recommended intensified sensitization through barazas, radio programmes, demonstration farms, and farmer organizations to close this awareness-utilization gap. These qualitative accounts corroborate the survey finding that farmers' weakest awareness item was knowing how to access services when needed, suggesting that the practical, access-oriented dimension of awareness is a shared concern between farmers and the officers who serve them.

These findings are consistent with studies linking farmer awareness to socio-economic and institutional factors. In Kenya, education, access to information, and local farmer networks have been found to shape how well farmers understand devolved extension responsibilities (Kyambo, Kilungo, & Amwata, 2021), which resonates with the relatively high education profile of respondents in the present study and their moderately high awareness scores. The finding that farmers understood the roles of extension officers better than they knew how to access services also mirrors the observation that awareness and empowerment are linked but do not always translate into the practical knowledge farmers need to engage extension systems (Mwololo, Nzuma, & Githinji, 2022). Similarly, farmers have been found to draw awareness from multiple, sometimes informal, channels rather than extension offices alone (Manteaw, Folitse, Mahama, & Wahaga, 2023), which may explain why a segment of respondents in the present study still reported limited awareness of how to access services despite reasonably high general awareness. Overall, the results support the view in the literature that awareness of devolved extension services in Kenya remains only moderately entrenched, with gaps particularly in the practical, access-related dimension of awareness rather than in general recognition of the service.

Association between Awareness and Farmers' Perceived Outcomes

To determine whether the observed level of awareness was significantly associated with farmers' perceived outcomes of devolved extension services, the corresponding null hypothesis, that there is no statistically significant level of awareness among small-scale farmers regarding the existence and roles of devolved services, was tested at the 0.05 level of significance using a chi-square test of independence. Awareness and perceived-outcome scores were each split at their sample median into 'Low' and 'High' categories. The results are presented in Table 2.

Table 2: Chi-Square Test Results for Level of Awareness and Perceived Outcome

Perceived Outcome	Awareness: Low	Awareness: High	Total
Low	165	79	244
High	56	93	149

Total	**221**	**172**	**393**
Chi-square (χ^2)	32.71		
Degrees of freedom (df)	1		
p-value	< .001		
Cramer's V	0.288		
Decision	Reject H0		

Table 2 shows that farmers' awareness of devolved public agricultural extension services was significantly associated with their perceived outcomes of the services. The chi-square test was statistically significant, $\chi^2(1) = 32.71$, $p < .001$, leading to the rejection of the null hypothesis. Small-scale farmers with high awareness were more likely to report high perceived outcomes than those with low awareness.

Cramer's V of 0.288 indicates a small-to-moderate association between the two variables. Thus, increased awareness of devolved public agricultural extension services appears to be associated with more positive perceived outcomes among small-scale farmers, reinforcing the view that awareness-building is not merely a precondition for service utilization but is itself linked to how favourably farmers judge the services they receive.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The study found that small-scale farmers in Bomet East Sub-County had a moderate-to-high level of awareness of devolved public agricultural extension services, with an overall composite mean of 3.61 out of 5. Farmers were most aware of the roles played by extension officers but least confident in knowing how to access services when needed, a pattern corroborated by extension officers themselves.

The chi-square test confirmed a statistically significant association between awareness and farmers' overall perceived outcomes of the services ($\chi^2 = 32.71$, $p < .001$), with a small-to-moderate effect size, indicating that awareness-building efforts have a meaningful bearing on how farmers ultimately judge devolved extension services.

Recommendations

County agricultural departments in Bomet County should strengthen public awareness campaigns that go beyond informing farmers of the existence of extension services to explicitly demonstrating how farmers can access these services, given that this was the weakest dimension of awareness identified in the study.

Given that farmers and extension officers both pointed to gaps in awareness of specific programmes and access channels, county governments should intensify sensitization through barazas, radio programmes, demonstration farms, and farmer organizations, complementing formal information channels with the informal channels farmers already rely on.

Recommendations for Further Research

Further qualitative research, drawing on structured engagement with extension officers, would help explain the institutional and resource constraints underlying uneven awareness of specific programmes among farmers. Future studies could also employ multivariate techniques to establish the relative predictive strength of awareness alongside other perception constructs in shaping farmers' overall assessment of devolved extension services.

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