

Farmers' Perceptions of the Role of New Media in Promoting Agricultural Services in Kericho East Sub-County, Kericho County, Kenya

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ABSTRACT

Farmers' perceptions of digital technologies are a critical determinant of their willingness to adopt and sustain new media for agricultural purposes, yet this dimension remains under-examined among smallholder farming communities in Kenya's Rift Valley region. This study assessed the perceptions of farmers on the role of new media in promoting agricultural services in Kericho East Sub-County, Kericho County, Kenya. A mixed-method, cross-sectional design was adopted and data was collected through a structured questionnaire, focus group discussions and key informant interviews. Perceptions were measured using a five-point Likert scale covering five statements on the value, benefits, and limitations of new media, supplemented by measures of farmers' engagement behaviour. Farmers expressed overwhelmingly positive perceptions, with the strongest endorsement recorded for willingness to recommend new media to fellow farmers (mean = 4.34, SD = 0.84; 87.7% agreement) and for the view that new media is essential for the future of agriculture in Kenya (mean = 4.21, SD = 0.87; 85.9% agreement). Farmers also reported feeling more empowered and informed (mean = 3.89) and perceived tangible profitability gains (mean = 3.68). However, farmers did not perceive new media as a replacement for traditional extension services (mean = 2.73), a pattern confirmed by a repeated-measures ANOVA showing significant differences across the five perception statements, $F(4, 708) = 98.34$, $p < .001$, $\eta^2 = .357$. High proportions of farmers also actively shared information (61.2%) and reported their information needs as fulfilled (64.6%), though engagement gaps persisted among less active sub-groups. These findings indicate that farmers view new media as a valuable, complementary addition to, rather than a substitute for, conventional agricultural extension. The study recommends a blended extension strategy that leverages farmers' positive perceptions and peer-to-peer diffusion networks alongside continued investment in human-mediated extension services.

Keywords: Farmers' perceptions, new media, agricultural extension, diffusion of innovation, Kericho County, Kenya

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1.0 Introduction

Farmers' subjective evaluations of a technology's usefulness, trustworthiness, and compatibility with existing practices are widely recognised as decisive factors in whether that

technology is adopted, sustained, or abandoned (Rogers, 2003). Perception precedes and shapes behaviour: a farmer who views a digital platform as credible, convenient, and beneficial is more likely to integrate it into routine decision-making, while scepticism or negative experience can stall

adoption regardless of a platform's objective capabilities. As new media platforms, including WhatsApp, Facebook, YouTube, and SMS-based services, have become increasingly embedded in rural communication ecosystems across sub-Saharan Africa, understanding how farmers themselves perceive these tools has become as important as documenting their patterns of use.

Global evidence suggests a generally positive but nuanced picture. Farmers with access to new media tend to value the timeliness of market and weather information and the convenience of remote communication, yet many retain a preference for face-to-face engagement with extension officers, particularly for complex or farm-specific problems. In East Africa, perceptions of mobile-based agricultural tools are shaped heavily by farmers' lived experience with connectivity, data costs, and the reliability of the information received; positive early experiences tend to reinforce continued use, while unreliable connectivity or misinformation can erode trust.

Within Kericho East Sub-County, a mixed rural and peri-urban area where tea and other food crops dominate smallholder livelihoods, new media platforms have expanded rapidly alongside rising smartphone penetration, yet little is known about how the sub-county's farmers themselves evaluate the value and limitations of these platforms. This gap matters because farmer perception, more than platform availability alone, determines whether the substantial investment already made in digital agricultural communication translates into sustained use and behaviour change. This study therefore sought to assess the perceptions of farmers in Kericho East Sub-County on the role of new media in promoting agricultural services, examining both their overall attitudinal endorsement of digital platforms and their associated engagement behaviours.

2.0 Literature Review

Farmers' perceptions of new media play a critical role in shaping their willingness to adopt and sustain use of these technologies. Existing evidence points to a generally positive orientation among farmers who have direct experience with

digital platforms: many recognise the value of timelier information and improved communication channels, and appreciate more convenient access to market prices, weather forecasts, and expert advice. At the same time, a persistent minority remain skeptical of online information or continue to prefer traditional, face-to-face interaction with extension officers, with trust in the source and accuracy of information emerging repeatedly as a key determinant of adoption.

In East Africa specifically, farmer perceptions of mobile-based agricultural communication tend to be shaped by lived experience with the underlying infrastructure. Farmers who have used WhatsApp groups or SMS-based services to obtain timely, locally relevant information generally develop favorable attitudes toward new media, recognizing mobile phones as valuable tools for both basic communication and agricultural knowledge-sharing (Mutegi, Mburu, & Mwangi, 2024). Community-based platforms in particular appear to strengthen these positive perceptions by embedding agricultural information within existing social relationships and trusted peer networks, which enhances both the credibility and the practical relevance of the information shared (Oduor, Owiny, & Njuguna, 2023). Conversely, farmers whose experience with new media has been characterized by unreliable connectivity, high data costs, or exposure to misleading information tend to hold more guarded or negative perceptions, underscoring that attitudes toward digital agricultural tools are not static but are continuously shaped by ongoing use.

This study was anchored in the Diffusion of Innovation Theory (Rogers, 2003) and the Digital Agriculture Theory. The Diffusion of Innovation Theory frames farmer perception as a central mechanism in the spread of new media use through a farming community: perceptions of an innovation's relative advantage, compatibility with existing practices, and observability of its benefits among peers determine the pace and extent of adoption, with early adopters and opinion leaders playing an outsized role in shaping the perceptions of later adopters. The Digital Agriculture Theory complements this view by framing positive farmer perceptions as evidence of the broader potential of digital technologies to democratize

agricultural knowledge, reduce information asymmetries between farmers and experts, and support more timely, informed decision-making. Read together, these frameworks suggest that farmer perceptions are both an outcome of prior diffusion processes and, through recommendation and peer influence, a driver of future adoption.

3.0 Materials and Methods

The study was conducted in Kericho East Sub-County, one of six sub-counties in Kericho County, Kenya, bordering Kipkelion East, Soin-Sigowet, and Belgut Sub-Counties. The sub-county was purposively selected because it combines semi-arid and highland agro-ecological zones as well as both urban/peri-urban and rural farming areas, making it broadly representative of the mixed climatic and land-use conditions found across much of Kenya's smallholder farming landscape. Tea and banana production are the dominant agricultural activities, and small-scale farmers constitute the majority of land users in the sub-county.

A mixed-method, cross-sectional research design was adopted, combining a structured quantitative survey with qualitative focus group discussions and key informant interviews. The target population comprised farmers drawn from five locations within the sub-county Ainamoi, Kapsaos, Kipchebor, Kipchinchim, and Township with an estimated farmer population of 1,940. A sample of 185 respondents was determined using a standard formula for finite populations at a 7% level of precision, drawn through stratified sampling across the five locations followed by purposive selection of farmers who owned smartphones; five agricultural extension officers and one officer from the Kenya Agricultural and Livestock Research Organization (KALRO) were purposively selected as key informants. Of the 185 questionnaires administered, 178 were fully completed and retained for analysis, yielding a response rate of 96.2%, well above the 70% threshold recommended for social science research (Mugenda & Mugenda, 2003).

Data on farmers' perceptions of new media were collected using a structured questionnaire incorporating a five-point Likert scale (1 = strongly disagree to 5 = strongly agree)

covering five statements addressing farmers' overall evaluation of new media's role in agriculture: its essentiality for the future of agriculture, its effect on farm profitability, its empowerment effect, farmers' willingness to recommend it to peers, and its potential to replace traditional extension services. The questionnaire additionally captured binary and categorical measures of farmers' engagement behavior, including frequency of accessing agricultural information from new media, contribution to online discussions, information-sharing behavior, perceived fulfilment of information needs, and preference for new media relative to other information channels. The instrument's internal consistency was assessed through a pilot study of 19 respondents (10% of the sample) conducted in the neighboring Soin-Sigowet Sub-County, yielding a Cronbach's alpha of 0.791 for the overall perception construct, indicating acceptable reliability.

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 24. Descriptive statistics (means, standard deviations, and frequency distributions) summarized the Likert-scale perception statements and engagement indicators. A repeated-measures analysis of variance (ANOVA) with Bonferroni-adjusted post-hoc comparisons was used to test whether mean scores differed significantly across the five perception statements. Chi-square tests and a logistic regression were used to examine associations between selected demographic variables and farmers' engagement behaviors. Qualitative data from focus group discussions and key informant interviews were analyzed thematically and triangulated with the quantitative findings.

A research permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI) following institutional approval. Informed consent was obtained from all respondents prior to data collection, participation was voluntary, and confidentiality of respondent information was maintained throughout data collection, entry, and analysis.

4.0 Results

Table 1 summarizes farmers' self-reported engagement behaviors with new media platforms (N = 178).

Table 1

Farmers' Engagement with New Media (N = 178)

Indicator	Yes n (%)	No n (%)
Accesses agricultural information frequently/occasionally	117 (65.8)	61 (34.2)
Contributes to discussions on new media	93 (52.2)	85 (47.8)
Shares agricultural information with others	109 (61.2)	69 (38.8)
Feels information needs are fulfilled by new media	115 (64.6)	63 (35.4)
Prefers new media over other information channels	105 (59.0)	73 (41.0)

Across all five indicators, a majority of farmers reported active and favourable engagement with new media. Contribution to discussions differed significantly by gender ($\chi^2 = 5.82$, $df = 1$, $p = .016$), with male farmers (59.4%) more likely to contribute than female ones (43.9%). Information sharing was moderately and positively correlated with frequency of accessing agricultural information ($r = .412$, $p < .001$). Fulfillment of information needs differed by farming experience ($\chi^2 = 9.87$, $df = 3$, $p = .020$), with farmers of over 20 years' experience more likely to report their needs as met (74.0%) than those with under five years' experience (53.6%). A logistic regression identified frequency of information access ($OR = 3.12$, $p < .001$) and smartphone ownership ($OR = 2.45$, $p = .006$) as significant predictors of farmers'

preference for new media over other channels, together explaining 31.8% of the variance in preference (Nagelkerke $R^2 = .318$); age and education were not significant predictors.

Among farmers who did not consider their information needs fulfilled, the most frequently cited reasons were content that was too general or not specific to their crops or locality, insufficient depth of advice, the cost of accessing data, difficulty verifying the trustworthiness of information found online, and the predominance of English-language content over local languages.

Table 2 presents farmers' level of agreement with five statements assessing their overall perception of new media's role in agricultural service promotion.

Table 2

Farmers' Overall Perceptions of the Role of New Media (Likert Scale, N = 178)

Statement	Mean	SD	% Agree/Strongly Agree
I would recommend other farmers to adopt new media for information	4.34	0.84	87.7
New media is essential for the future of agriculture in Kenya	4.21	0.87	85.9
I feel more empowered and informed as a farmer because of new media	3.89	0.92	75.3
New media has made farming more profitable for me	3.68	1.03	62.9
New media will eventually replace traditional extension services	2.73	1.22	29.8

Farmers demonstrated the strongest endorsement for recommending new media to peers (mean = 4.34, SD = 0.84), with 87.7% agreeing or strongly agreeing. Nearly as strong was agreement that new media is essential for the future of agriculture in Kenya (mean = 4.21, SD = 0.87; 85.9% agreement). The following is the assertion made by a participant during an FGD discussion in Township sub county:

“Technology is the future. If we want to improve agriculture in Kenya, we must embrace new media. It will help us access information, connect with markets, and improve our farming practices.”
(FGD Participant, Male, 44 years, Township)

Farmers also reported feeling more empowered and informed as a result of engaging with new media (mean = 3.89, SD = 0.92; 75.3% agreement), and a majority perceived that new media had made farming more profitable for them (mean = 3.68, SD = 1.03; 62.9% agreement), although 23.6% of respondents remained neutral on the profitability statement, suggesting that economic benefits have not yet been

experienced uniformly across the sampled population. By contrast, the statement that new media will eventually replace traditional extension services recorded the lowest mean score (2.73, SD = 1.22), with only 29.8% agreement and 48.9% disagreement, indicating that farmers view digital platforms as a complement to, rather than a substitute for, human-mediated extension. The following observation was made by an FGD participant in Ainamoi sub county:

“New media is good, but it cannot replace the extension officer completely. Sometimes you need someone to come and see the problem on your farm. Technology helps, but it cannot replace personal interaction and practical demonstration.”
(FGD Participant, Male, 55 years, Ainamoi)

A repeated-measures ANOVA was conducted to test whether mean scores for the five perception statements differed significantly. Table 3 shows the repeated measures on ANOVA on mean scores for overall perception statements.

Table 3
Repeated-Measures ANOVA on Mean Scores for Overall Perception Statements

Perception Statement	Mean	Post-hoc Comparison Result
Recommendation statement	4.34	Significantly higher than all other statements ($p < .001$)
Replacement statement	2.73	Significantly lower than all other statements ($p < .001$)

Results showed significant differences across the five statements, $F(4, 708) = 98.34$, $p < .001$, $\eta^2 = .357$. Bonferroni-adjusted post-hoc comparisons confirmed that the recommendation statement was rated significantly higher than all other statements, while the replacement statement was rated significantly lower than all others, reinforcing that farmers hold both strongly positive overall attitudes toward new media and a clear, consistent view that it is complementary rather than a substitute for traditional extension.

5.0 Discussion

The overwhelmingly positive perceptions documented in this study, particularly the high recommendation rate (87.7%), are

consistent with the Diffusion of Innovation Theory’s emphasis on the role of opinion leaders and peer networks in technology adoption (Rogers, 2003). Farmers who have experienced tangible benefits from new media appear to function as advocates within their social networks, a dynamic that is likely to accelerate further diffusion of digital agricultural tools in Kericho East Sub-County through observational learning and social proof, consistent with patterns documented for community-based platforms elsewhere in the region (Oduor, Owiny, & Njuguna, 2023).

The strong endorsement of new media’s essentiality for the future of agriculture, together with farmers’ reported sense of empowerment, lends support to the Digital Agriculture

Theory's proposition that digital platforms can reduce information asymmetries between farmers and experts and enable more timely, autonomous decision-making. This empowerment effect echoes findings that mobile-based communication strengthens farmers' confidence and engagement with agricultural knowledge (Mutegi, Mburu, & Mwangi, 2024). This convergence extends beyond Kenya: in a survey of smallholder maize farmers in Tanzania, the majority reported that mobile phone use had increased their farming profits, and reduced the costs and time invested in farm-related activities, a pattern of largely favourable perception of digital tools' economic value that closely mirrors the 62.9% agreement recorded for the profitability statement in the present study (Quandt, Salerno, Neff, Baird, Herrick, McCabe, Xu, & Hartter, 2020). Similarly, small-scale farmers in Mahikeng, South Africa, held predominantly positive perceptions of ICT adoption, with roughly two-thirds agreeing on its value for improving productivity, profitability, and market access, and with perceptions shaped significantly by education level, a pattern broadly consistent with the education-linked gradient observed in farmers' engagement behaviour in Kericho East Sub-County (Shemfe & Modirwa, 2026).

The clear rejection of the notion that new media will replace traditional extension services is among the most consistent findings of this study, corroborated by both the Likert-scale results and the repeated-measures ANOVA. This finding challenges narratives of full technological displacement in agricultural extension and instead supports a blended model in which digital platforms handle routine, time-sensitive information needs, while extension officers retain a distinctive role in practical demonstration, personalised diagnosis, and trust-building, functions that farmers appear unwilling to cede entirely to digital channels.

Not all evidence from the region points as uniformly toward positive, behaviourally consequential perceptions, however, and this divergence is instructive for interpreting the gap observed in the present study between very high attitudinal endorsement (85.9–87.7% agreement on the leading statements) and comparatively more modest behavioural

engagement (52.2% contributing to discussions; 61.2% sharing information). In Senegal, a four-year evaluation of an ICT-enabled agricultural extension programme found that exposure to radio- and mobile-based services raised farmers' awareness but was not associated with a significant increase in the adoption of the promoted seed and fertiliser technologies, with women consistently less likely to engage with the ICT services than men (Voss, Jansen, Mané, & Shennan, 2021). This finding cautions against assuming that positive perception, or even awareness, of new media translates automatically into sustained behaviour change, and it resonates with the gender disparities in contribution and access documented in the present study. A comparable qualitative inquiry among smallholder farmers in Gokwe South District, Zimbabwe, similarly found that farmers generally regarded mobile technology as a valuable tool for agricultural communication, yet sustained, productive use remained constrained by digital literacy, affordability, and telecommunication infrastructure, meaning that favourable attitudes coexisted with markedly uneven actual use (Musungwini, van Zyl, & Kroeze, 2024). Read alongside these two studies, the pattern observed in Kericho East Sub-County, where farmers' attitudinal endorsement of new media considerably outpaces the proportion who are actively contributing to or sharing information on digital platforms, appears to be a structural feature of new media adoption in East and Southern African smallholder contexts rather than a peculiarity of this study population, underscoring that closing the perception-to-engagement gap, and not merely reinforcing already-positive attitudes, is where future intervention is most needed.

The gender and education-based disparities observed in engagement behaviour, particularly the lower rates of contribution to online discussions among female farmers, point to a digital participation gap that mirrors patterns of digital exclusion documented more broadly in the literature on mobile technology adoption in East African smallholder communities. Because perception and engagement are mutually reinforcing, closing this participation gap is likely to be important not only for equity but also for sustaining the positive perceptions that currently characterise the majority of

farmers in the sub-county. As this study relied on a single cross-sectional survey and self-reported measures within one sub-county, its findings should be interpreted as reflecting farmers' perceptions at a particular point in time rather than a stable, generalisable pattern across all Kenyan smallholder contexts.

6.0 Conclusion and Recommendations

This study concludes that farmers in Kericho East Sub-County hold overwhelmingly positive perceptions of the role of new media in promoting agricultural services, recognising digital platforms as essential to the future of agriculture and as tools that enhance empowerment, information access, and, to a somewhat lesser extent, profitability. At the same time, farmers hold a realistic and consistent view that new media complements rather than replaces traditional, human-mediated extension services.

Based on these findings, the study recommends that agricultural extension providers in Kericho East Sub-County adopt a blended extension model that deliberately integrates new media with continued face-to-face extension contact, rather than treating the two as substitutes. Given the strong peer-recommendation effect documented in this study, extension programmes should identify and support farmer opinion leaders who have benefited visibly from new media to accelerate diffusion through existing social networks. Targeted outreach is further recommended to close the participation gap observed among female farmers and less experienced farmers, so that the benefits of positive perception translate into broader and more equitable engagement. Finally, because this study captured perceptions at a single point in time, future research should adopt a longitudinal design to examine how farmers' perceptions of new media evolve as connectivity, digital literacy, and locally relevant content improve over time.

Declarations

Declaration of Interest:

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of AI Use

This manuscript was prepared through the combined contributions of all authors, including contributions to the study design, data, content development, results, interpretation, and related scholarly work. The author(s) acknowledge the use of Grammarly to assist with grammar checking, language refinement, and reference formatting. These AI-assisted tools were not used as authors and did not replace the intellectual contributions or scholarly judgment of the author(s). The author(s) accept full responsibility for the accuracy, integrity, and final content of the manuscript.

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Data Availability: The datasets generated during the study are available from the corresponding author on reasonable request.

Author Contributions: Christine Chelangat Senger conceptualised and designed the study, collected and analysed the data, and drafted the manuscript. Joel Ngetich and Cellyne Awino supervised the research, contributed to the study design, and reviewed and revised the manuscript for intellectual content. All authors read and approved the final manuscript.

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