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Leveraging video integration for enhanced agricultural extension reforms in Uganda

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ABSTRACT

This article examines the integration of video technology in extension reforms to enhance agricultural extension services in Uganda, focusing on Kamwenge district. Utilizing data from desk reviews, surveys, key informant interviews and focus group discussions (FGDs), the study examines the prerequisites for video integration, particularly under the Sasakawa Global 2000 rice cultivation project. Adhering to research ethics and data credibility, findings reveal strong approval for videos as a powerful tool to bridge the extension gap, providing timely and reliable content to farmers and strengthening connections between service providers and communities. The integration of video into the Government of Uganda's inter-ministerial statement and the 5-year Development Strategy and Investment Plan, facilitated by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), signals a commitment to leveraging Information and Communication Technology (ICT) for agricultural progress. However, the study identifies significant challenges, including funding constraints and unclear actor roles that threaten the sustainability of video-mediated extension. Thus, urgent measures are required to ensure adequate funding and clear stakeholder roles. This research underscores the need for sustained investment and stakeholder collaboration to maximize the impact of video technology in agricultural development in Uganda and elsewhere.

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1. Introduction

Many governments in developing nations are actively pursuing reforms in their agricultural extension systems, recognizing the pressing need to address the information and learning needs of farmers and rural communities (Semana, 2008; Karubanga et al., 2017). For instance, in Uganda, the agricultural extension system has undergone significant transformations over the past 50 years with the goal of enhancing the productivity, competitiveness and livelihoods of smallholder farmers (Bashaasha et al., 2011). These reforms have evolved from colonial-era state-controlled enforcement systems to post-independence regulatory and educational models, and later to intensification approaches like the Training and Visit Approach of the 1990s, and eventually to recent neo-liberal strategies such as the National Agricultural Advisory Services (NAADS) and pluralistic extension delivery approaches (Anderson, 2007; Semana, 2008; Bashaasha et al., 2011; Food and Agriculture Organization [FAO], 2014). According to the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) in Uganda, agricultural extension delivery comprises diverse approaches and tools, including face-to-face training, farmer field schools (FFS), field demonstrations, agricultural shows, field days, exchange visits and mass media (National Agricultural Extension Policy, 2016). However, without adequate financing and serious consideration of necessary institutional arrangements and technical capacities, these approaches may not effectively complement each other to facilitate farmer learning. Even seemingly learning-oriented approaches like farmer-to-farmer extension

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and FFS have shown limited evidence of farmer learning, raising concerns about their scalability (Akpabio et al., 2007; Wellard et al., 2013; Food & Agriculture Organization [FAO], 2014).

In light of these challenges, Information and Communication Technologies (ICT), particularly videos, are increasingly recognized for their potential in disseminating agricultural information (Bello-Bravo et al., 2021). In particular, video can promote learning, share high-quality information and have successfully been used by AfricaRice and Sasakawa Global 2000 to disseminate agricultural knowledge among diverse farmer categories (Bentley et al., 2015; Biney & Kumi, 2023). For instance, SG 2000 piloted use of videos in Kamwenge district of Uganda between 2007 and 2010 by locating the video shows in a central place which was open for all people to attend (Bello-Bravo et al., 2021). In this case, the participants were self-selected to participate in the video shows. The videos were run fortnightly from 7:00 pm to 9:00 pm by SG 2000 staff. The purpose was to enhance farmer learning about better rice production practices and technologies.

After recognizing the potential of video in enhancing farmer learning about new practices and technologies (Karubanga & Agea, 2018), the MAAIF has incorporated this approach into ongoing agricultural extension reforms (National Agricultural Extension Policy, 2016). Though this is a good step towards enhancing efficient and effective extension service delivery, the current reforms must lay the best strategies that appropriately integrate video mediated learning into extension policies for sustainable use (FAO, 2014; Chepkoech, 2015; Tata & McNamara, 2016, 2018). This article advocates for integration of video into agricultural extension reforms, using Kamwenge district as a case study. To achieve this, the study assessed the prerequisites for meaningful integration of video in the ongoing agricultural extension reforms for enhanced extension service delivery in Uganda. Addressing this objective sheds light on the social and economic potentials of interventions in the agricultural sector, emphasizing the importance of contemporary policy work in agricultural advisory service delivery. This theoretical and analytical framing not only contextualizes the evolution of agricultural extension in Uganda but also underscores the transformative potential of video technology in enhancing extension services. It further provides a structured lens through which the findings of the paper can be understood and applied to broader agricultural policy and practice.

2. Methods

To address the research objective, a follow up case study targeting similar participants who were involved in a broad study for a PhD thesis titled 'Effectiveness of video-mediated extension approach as used by Sasakawa Global 2000 to influence social learning among rice farmers in Uganda' was conducted in 2018. The said thesis unraveled the potential of video as an effective tool for farmer learning (Karubanga, 2017), but it never explored the critical policy related issues that need to be considered by extension actors and policy makers to further enhance the impact of video in extension. Thus, the aim of this article was to provide empirical evidence to inform ongoing extension reforms, particularly regarding the critical prequisites for integration of video in the extension service delivery for enhanced farmer learning. Eight villages in Mahyoro sub-county in Kamwenge district were purposively selected based on the availability of records of farmers who participated in the video shows and the broad PhD study in 2015–2016. These villages included Karere, Kyendangara, Rwentuma, Buhindagi, Kitonzi, Katanga, Kitomi and Burembo.

To gain a deeper understanding of the prequisites for integration of video in current extension reforms for enhanced extension service delivery in Uganda, we employed both qualitative and quantitative research approaches. The qualitative approach aimed to delve deeper into the opinions of development actors regarding the necessary prerequisites for integrating videos sustainably. This involved exploring actor' perspectives on human resources, finance, monitoring protocols, reporting and feedback mechanisms, input supply and actor' roles and responsibilities required for effective video integration. Concurrently, the quantitative approach sought to gauge farmers' perceptions of the prerequisites for embedding videos in extension and their overall opinions of video operations.

Conversely, at the time of conducting this study, Makerere University as a host institution for the research did not have an ethics and institutional committee known as College of Agricultural and Environmental Sciences Research Ethics Committee (CAESREC) in place to provide an ethics approval. Since there was no established ethical committee in place, we conducted the research because the study

included surveys that are anonymous. In this case, we thought that our largely anonymous of research design and instruments would not put the subject at risks. Additionally, in our research instrument design, direct identifiers of the respondents were never collected. So we anticipated that any future dissemination of research results does not allow identification of specific individuals. However, verbal consent was sought from the respondents due to the sensitive nature of the research supporting data. Thus, we avoided the written consent and opted for verbal consent in this study because we wanted the identities of the respondents to be completely anonymous. Verbal consent usually involves very minimal risk involved in the study. Obtaining written consent as opposed to verbal consent was not appropriate according to the cultural mix of the population we studied. There would be a possible legal, social or economic risk to some participants in the study by obtaining written consent from them. Also, some immigrants in the population mix could later be easily identified as being illegal aliens. However, written consent to publish details of all individuals has been obtained or their legal guardians.

Data collection comprised of four phases, beginning with focus group discussions (FGDs) involving participants who had watched the videos on rice production. About 48 focus group participants consisting of 19 men and 29 women who got involved in rice production since 2009 and later viewed videos, were purposively selected for deeper insights into the prequisites for integration of videos in extension service delivery. The 48 participants were picked from a list of 100 participants who had registered with Mahyoro Rice Farmers Association (MARFA). Each FGD comprised of about eight participants who were selected from the eight villages of the study.

The second phase involved a survey to gather quantitative data on video participants' opinions regarding the prerequisites for video integration in extension. A total of 100 video participants (i.e. farmers who watched the video), including 71 men and 29 women were selected by census and interviewed. Here, the focus was on local support systems that ensure the sustainability of video use in extension service delivery.

In a third phase, a document review of the National Agricultural Extension Policy (2016) was conducted to assess the extent to which the policy addresses ICT use, particularly in the context of video integration. Focus was on how the policy proposes to support the video operations in terms of funding, reporting, training of staff in video operations and ensuring collective responsibility of actors engaged.

The fourth phase involved conducting key informant interviews with 15 individuals who were purposively selected, including four staff and 11 farmers (from the FGDs). These interviews aimed to gather deeper insights into opinions regarding the prerequisites for video integration. Specifically, SG 2000 was consulted for information on local infrastructure, finance, monitoring and reporting of video events, as well as strategies for sustainability.

Following Bernad (2000) and Kawulich (2004) guidelines, qualitative data from key informant interviews and FGDs were analyzed using thematic-content analysis and coding, extracting and relating information on variables of interest. Anecdotal evidence, such as quotes from respondents were used to support narrative explanations. Quantitative data from the semi-structured questionnaire were analyzed using SPSS version 18.0 (SPSS Inc., Chicago, IL) to generate percentages supporting the narrative findings.

3. Findings

This result section provides the prerequisites for integration of video in agricultural extension service delivery. Each prerequisite is clearly explained in the subsequent sections.

3.1. Financing video initiatives for extension services

Funding for video events in extension services primarily originated from the International Rice Research Centre (IRRC). For instance, IRRC allocated 15,000 United States Dollars (USD) to support the screening of rice-related videos for farmers in Mahyoro sub-county, Kamwenge district. This funding was disbursed annually to SG 2000 in three installments of 5000 USD per year. Utilization of these funds encompassed various activities, such as organizing field days, establishing demonstration sites, procuring equipment and acquiring production inputs like rice seeds, watering cans, hoes and fertilizers. Additionally, a portion of the funds was allocated to cover staff welfare expenses including transportation, meals and incentives.

However, no funding was provided by the local government (LG) to support these video events, posing a significant challenge to the sustainability of such initiatives. The absence of earmarked funds from the LG or sub-county budget for video events highlights a crucial issue that the ongoing extension service reforms must address to ensure the effective integration and utilization of videos for farmer training. The lack of sustained funding contributed to the cessation of video events after the conclusion of the three-year SG 2000 project, raising concerns about their long-term sustainability if not integrated into a unified extension service delivery system.

Key informant and focus group interviews with farmers also revealed that insufficient funding significantly impacted the regularity of video operations, thereby impeding farmers' access to learning opportunities. For instance, majority of video participants reported infrequent showing of video events, with 78% indicating rare occurrences, 13% monthly and 9% fortnightly. Inadequate funding also hampered the monitoring of video activities by staff. To address this, 76% of participants suggested increasing the frequency to at least twice a month to facilitate continuous learning and knowledge retention among farmers. Participants during key informant and focus group interviews opined that;

> Videos provide timely and reliable content to farmers and strengthening connections between service providers and communities. They also elicit learning and sharing of knowledge among farmers. However, if they are not well funded, it will also affect the regularity of video operations and follow up of farmers, thus affecting farmer learning and effective implementation of the acquired knowledge and skills. (Kyendangara village, 24 May 2016).

Conversations with the key informant highlighted the financial constraints hindering regular video operations. For instance, it was estimated that running video shows twice a week would require approximately 300 USD, covering expenses for transportation, staff allowances, fuel, hiring equipment and advertising through local radio broadcasts. Such expenses exceeded the sustainable capacity of the implementing organization, underscoring the need for clear financing strategies in the extension service delivery reforms to ensure the coexistence of video-based approaches with other extension modalities.

Regarding staff incentives, an average video event required each staff member to receive 25 USD for transportation and lunch allowances. While staff expressed satisfaction with the additional payments received monthly, embedding video operations into the terms of reference (ToR) of extension staff, as proposed by the MAAIF through the DAES, could mitigate these additional expenses for sustainable implementation.

Furthermore, the documentation of local and context-specific videos incurred substantial costs, estimated at an average of 20,000 USD as reported by the key informant. These expenses covered activities, such as identifying farmers for filming, actual filming, editing, duplication and distribution of videos to relevant organizations for utilization. Key informants noted that addressing these funding challenges is crucial for ensuring the sustainability and effectiveness of video-based extension services in Uganda.

3.2. Integration of input supply in extension services

One of the key informants emphasized that, initially, SG 2000 supported by IRRC supplied inputs, such as seeds, fertilizers, pangas, hoes and watering cans to staff for establishing demonstration plots. These plots were intended to complement farmer learning through video by providing on-site demonstrations of practices as shown in the videos, thereby deepening farmer understanding. During the first year of project implementation, some farmers received free seeds to try on their farms. Farmers perceived varieties like New Rice for Africa 4 and 10 (NERICA 4 and 10) as high yielding and disease-resistant. However, this support could not be sustained due to the high demand for clean seeds in subsequent years.

Discussions with key informants revealed that farmers developed a mentality expecting more free tangible benefits due to this project approach. For instance, 88% of farmers expected readily available free rice seeds, tools/equipment (e.g. sickles, tarpaulins and threshers) and chemicals (e.g. fertilizers, pesticides and herbicides) from SG 2000 association. However, SG 2000 did not meet these expectations, leading to disappointment among farmers. Therefore, extension service reforms by MAAIF should focus

on connecting farmers with reputable input providers for easy access to subsidized agricultural inputs. One key informant recommended integrating video events and agro-input dealers in extension reforms to facilitate immediate access to production inputs after watching videos, thus promoting implementation. This integration is seen as a promising business model that can support video operations, with extension staff expressing interest in participating once institutionalized in the current extension reforms. However, to ensure quality service provision, agro-input dealers need regulation to protect farmers from exploitation and prevent the sale of fake inputs. For example, 37% of farmers reported that local agro-input dealers sell fake seeds, leading farmers to rely on low-yielding home-saved local seeds. Therefore, policy interventions should address these challenges to enhance the effectiveness and sustainability of extension services.

3.3. Staffing and training of extension workers

Conversations with the key informant revealed that only three personnel were involved in conducting video shows. Among them, two were affiliated with SG 2000, while the third hailed from Mahyoro sub-county. Interestingly, one SG 2000 staff member was tasked with conducting video sessions in Mahyoro sub-county. Additionally, a resource person from Mahyoro sub-county was responsible for establishing rice demonstration sites, allowing farmers to practically apply the techniques and technologies learned from the videos. Key informants' recommendations emphasized the necessity of having three individuals at video sites for effective operation: an ICT specialist, an agronomist, and a facilitator to record farmers' inquiries.

Regarding the educational backgrounds of the staff, one of the staff had a Master's degree in Agricultural Extension Education from Makerere University, while another possessed a Bachelor's degree in fisheries from the same institution. The staff member responsible for conducting video operations had obtained a diploma from Bukalasa Agricultural College. Notably, one staff lacked a background in crop production, instead specializing in fisheries. However, he was selected based on his extensive experience working with farmers in the same sub-county for eight years. Staff selection for video operations prioritized experience over agricultural expertise.

Notably, staff received no specific training in video utilization for farmer education. Thus, under current extension reforms, avenues for training extension personnel in facilitating farmer learning through videos need integration into the Department of Agricultural Extension Services (DAES). The official of SG 2000 facilitated some video operations based on knowledge acquired from the university. However, the absence of prior training in video usage necessitated technical support from IRRC to enhance the effectiveness of video operations, especially in addressing farmers' technical inquiries.

One of the key informants suggested that ongoing efforts by MAAIF to incorporate ICT-based tools into extension service delivery should include nationwide training for staff conducting video events. Such capacity-building initiatives would bolster the confidence of extension staff in operating video events and facilitating farmer learning through this medium. However, these reforms must consider cost implications, including facilitation for trainers, field excursions and participant welfare. To address this gap, the recent 'single' spine extension reform has recommended the recruitment of qualified extension staff under LGs. Document reviews indicate that this initiative aims to provide opportunities for videos to be included in the ToR of newly recruited staff, potentially integrating video use more systematically into extension services. Furthermore, reviewing and integrating video-mediated instruction into the curricula of agriculture-based universities and colleges is crucial. This would expose future extension professionals to video-related learning, equipping them with the necessary knowledge and skills to effectively utilize videos for farmer training.

3.4. Monitoring and evaluation of video events

Monitoring of video events is perceived by extension staff as a crucial aspect, facilitating the tracking of performance. However, follow-up on these events was primarily conducted by SG 2000 staff and the Mahyoro sub-county official. Unfortunately, monitoring was infrequent due to funding constraints, leading to reliance on phone communication between farmers and staff. Farmers expressed dissatisfaction

with the sporadic follow-up from SG 2000, hindering their ability to implement lessons learned from the videos effectively. This lack of clear monitoring systems was attributed partly to heavy workloads, as top officials were often engaged in various tasks, including receiving visitors. One of the key informants said that;

> Monitoring has been inadequately done because as staff in an organization one gets involved in many things including receiving visitors who come to the association. It requires staying on station because the video events were located far away from the head offices. That is why top officials are not heavily involved in monitoring video events.' (Key informant interview, 19 April 2016)

To address these challenges, one of the key informants proposed conducting quarterly review meetings with beneficiaries to solicit feedback on improving video operations. This is crucial for the seamless integration of videos into current extension service delivery. Establishing a formal monitoring protocol would enable the documentation of video performance metrics, such as participant numbers and demographics. Interestingly, farmers expressed a preference for forums where they could convene to discuss, reflect and share experiences with fellow farmers following video events. In summary, the establishment of an effective monitoring protocol is imperative for enhancing the efficacy of video-based agricultural extension services. This protocol would enable systematic tracking of video event performance and facilitate ongoing improvement through stakeholder feedback mechanisms.

3.5. Reporting mechanisms for video events

Conversations with the key informants revealed that reporting on the progress of video events primarily occurred during quarterly meetings. Surprisingly, there were no written reports detailing the progress of these events. Instead, staff relied on verbal communication during monthly organizational meetings. The absence of a formal reporting system hindered the ability to track metrics, such as the number of viewers, frequency of events and farmers' experiences. The key informant acknowledged the importance of such reports but noted that extension staff perceived them as additional workload. The lack of written reports made it challenging for implementing organization to assess the reach of their efforts, understand the origin of participating farmers and identify challenges faced during implementation of acquired knowledge. Moreover, organizational restructuring in 2009 led to the disposal of many documents, including those related to video events, as they were deemed irrelevant by the new director. The key informant commented that;

> If you came and did not find me here, it would be difficult to get information about how the videos were run. There are no written reports about the video events because most of the documents were trashed due to re-arrangement within the organization in 2009 as most the documents were deemed irrelevant. (Key informant interview, 19 April 2016)

The absence of written documentation poses significant challenges in evaluating the effectiveness of video events and presenting credible evidence to policymakers. Without such evidence, integrating video initiatives into national budgets becomes problematic. Furthermore, the successful integration of videos into extension work necessitates the development of systematic reporting formats that extension workers can utilize to report on video-related activities. In a nutshell, the lack of written reports on video events hampers effective monitoring and evaluation (M&E) hindering evidence-based decision-making and potentially impeding the integration of video initiatives into national agricultural policies and budgets. Therefore, implementing structured reporting mechanisms is crucial for enhancing the accountability and effectiveness of video-based extension services.

3.6. Feedback mechanisms for continuous improvement

Similar to other developmental events like theatre-forum, the feedback from participants regarding video events is crucial for the overall improvement of video-mediated extension services. However, both SG 2000 and MARFA relied solely on farmers' initiatives to provide feedback. Conversations with key informants highlighted the absence of formal feedback mechanisms within video-mediated extension

programs, depriving farmers of avenues to share their opinions and experiences. To address this gap, stakeholders recommended the integration of local contacts, such as change agents into extension reforms. These individuals would serve as intermediaries, gathering feedback from farmers and forwarding it to relevant offices. Additionally, enhancing feedback provision could involve the introduction of a toll-free line for farmers, facilitating easier communication and feedback submission. By embedding formal feedback mechanisms into video-mediated extension programs, policymakers can ensure that farmers' voices are heard, enabling continuous improvement and optimization of extension services. This approach fosters a more participatory and responsive agricultural extension system, ultimately enhancing the effectiveness and impact of video-based interventions.

3.7. Clear roles and responsibilities of stakeholders

Various actors and organizations, including SG 2000, IRRC, Mahyoro sub-county and MARFA, played roles in supporting video events, albeit without formally defined responsibilities, posing sustainability challenges. SG 2000 primarily focused on screening videos and establishing demonstration plots. IRRC provided funding for video shows, procured inputs for plots and covered facilitators' allowances. Mahyoro sub-county offered technical support to SG staff while MARFA hosted video shows and mobilized farmer participation. The lack of formal roles jeopardized sustainability. Stakeholder involvement and networking were crucial for sustainable video-mediated extension in Uganda. Notably, LG and ministry officials' absence impedes funding and ownership, essential for sustainability. Engagement of these officials ensures national and regional support through establishing a clear structure for video integration within government frameworks. Successful integration necessitates defined roles, emphasizing the need for sustainability synergies to enhance video-mediated learning effectively.

4. Discussion

In Uganda, the adoption of various video formats within agricultural extension services represents a promising yet relatively new technological advancement. These videos play a pivotal role in overcoming information dissemination challenges (Bello-Bravo & Barry, 2018; Bello-Bravo et al., 2021; Dhivya et al., 2023), particularly among marginalized groups such as the poor, women, and youth (Bertus et al., 2010; Bello-Bravo et al., 2021; Noori et al., 2022). They serve multifaceted purposes, including raising awareness, stimulating demand for agricultural support, enabling farmer-to-farmer extension, providing training on agricultural innovations, fostering creativity and serving as tools for documentation and M&E (MAAIF, 2012; UBOS, 2010).

However, despite the acknowledgment of video's potential within MAAIF policy strategies, the full integration of ICT tools, including videos, into agricultural extension services remains problematic. Funding uncertainties and intermittent financial support jeopardize the regularity, visibility, ownership and sustainability of video-based initiatives (Bentley et al., 2015; Van Mele, 2011). Ensuring the regularity of video events is crucial for sustained learning and knowledge acquisition, a perspective echoed in previous literature (MacGregor, 2007). Clear delineation of roles and responsibilities among stakeholders is imperative for effective video-mediated instructional and learning processes (Koppen, 2007; Dhivya et al., 2023). Commitment, responsibility and ownership at both national and local levels are fundamental to the sustainability of video-mediated extension approaches (Danielsen et al., 2015; Bentley et al., 2015; Zossou et al., 2010).

The involvement of various stakeholders, including NGOs, is crucial for the sustainable operation of video-based interventions. NGOs, due to their flexibility, accountability and technical capacity, are key players in agricultural extension and service delivery (Danielsen et al., 2012). However, the lack of a clear working strategy between NGOs, local governments (LGs) and the central government (CG) often leads to friction and impedes integration efforts. Effective policy framework support for ICT use is essential for integrating videos into current extension approaches (Bello-Bravo & Barry, 2018), yet funding uncertainties persist, hindering progress (UBOS, 2010; MAAIF, 2012).

The importance of technical human resources in the successful integration of video into extension service delivery cannot be overstated (National Agricultural Extension Policy, 2016). However, scarcity of

human resources in agricultural extension remains a challenge, necessitating the strengthening of available skills despite budgetary constraints (Danielsen et al., 2015; Bashaasha et al., 2011; MAAIF, 2012). To address this requires availing finances and ensuring capacity building of extension staff to support and facilitate video-based extension services. While video-mediated extension holds promise, its full integration may take time and it cannot fully replace the need for technical support for smallholder farmers in rural areas (Harun-Ar-Rashid et al., 2010; Van Mele, Wanvoeke, Zossou, 2010; Bentley et al., 2015). Coordinated technical support from experts and engagement with key stakeholders are essential for enhancing video-mediated learning among farmers and scaling out video events (Danielsen et al., 2012; Van Mele, Wanvoeke, Akakpo, et al., 2010; Bello-Bravo et al., 2021). Thus, while videos present significant opportunities for improving agricultural extension services in Uganda (Bello-Bravo & Pittendrigh, 2018), addressing funding uncertainties, defining clear roles and responsibilities, and strengthening technical capacities are critical for their successful integration and sustainability.

5. Conclusion

The study aimed at assessing the prerequisites for integration of video into the agricultural extension reforms for enhanced extension service delivery in Uganda. Our research highlights the importance of not only designing appropriate tools and methods but also ensuring their effective integration into existing extension service delivery models. Simply introducing new technologies, such as ICTs like videos, without proper integration and ownership by relevant stakeholders may lead to limited impact on improving agricultural extension service delivery. We notice that, there is increasing interest among governments and donors in supporting demand-driven extension approaches and tools like videos. However, the critical challenge identified for effective integration of video in extension is related to inadequate, unreliable and sporadic nature of funding for extension activities, which directly affects the regularity and sustainability of video-based interventions. Therefore, clear financing strategies are essential to support the sustainable use of videos in agricultural extension. Furthermore, addressing the funding issue requires concerted efforts from all concerned actors, including policy makers, extension professionals and development partners. Without adequate financial support, the promising potential of videos in training smallholder farmers may remain unrealized. Moreover, integrating videos into extension services necessitates establishment of feedback mechanisms to assess the performance of video-based interventions. This ensures that videos are effectively adapted to the dynamic context of agricultural extension. Our findings emphasize the need for collaborative efforts among key stakeholders to fully realize the benefits of using videos in agricultural extension. We therefore conclude that, paying attention to the identified critical prequisites for integration of videos in extension is paramount in enhancing effective extension service delivery and contributing to the sustainable development of agricultural sector in Uganda and beyond.

Disclosure statement

We the authors of this paper declare that there are no conflicting interests in this publication.

Author's contributions

Gabriel Karubanga – Substantial contributions to the conception and design of the work; collection, analysis and interpretation of data, drafting, reviewing of the manuscript and final approval of the version to be published. He holds a PhD in Agricultural and Rural Innovation of Makerere University, Uganda. He is a Lecturer in the Department of Extension and Innovation Studies, School of Agricultural Sciences, College of Agricultural and Environmental Sciences at Makerere University. He has a teaching experience of over 13 years in a university. His research interests include agricultural innovation systems, agricultural extension and education, communication for development. He has also special interest in knowledge management and communication, community outreach, action research, planning, monitoring and evaluation of agricultural and rural development programs. He has diverse research publications in different fields of agriculture, extension, education, outreach, plant health and ICT for rural development

Jacob Godfrey Agea – Substantial contributions to the conception and design of the work, reviewing the manuscript for important intellectual content and final approval of the version to be published. He holds a PhD Agriculture (Applied Ethno-botany & Food Security) of Bangor University (formerly University of Wales), United Kingdom (UK).

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Narisi Mubangizi – Drafting, reviewing the manuscript for important intellectual content and final approval of the version to be published. He holds a PhD in Agricultural and Rural Innovation of Makerere University, Uganda. He is a Lecturer in the Department of Extension and Innovation Studies, School of Agricultural Sciences, College of Agricultural and Environmental Sciences at Makerere University. His research interests include agricultural extension systems, rural livelihood analysis and improvement, climate change and resilience.

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Data availability statement

As clearly stated in the methodology, the participants of this study did not give written consent for their data to be shared publicly, So due to the sensitive nature of the research, supporting data is not available.

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