



Assessing the Contribution of Mobile Phone Agricultural Information on Maize Productivity: A Case Study of Kilolo District, Tanzania

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Abstract:

The purpose of this study is to investigate the contribution of mobile phone agricultural information on maize productivity among smallholder farmers in Kilolo District while taking into consideration contextual factors that may affect the efficacy of such interventions. By analyzing the potential benefits associated with the dissemination of agricultural information via mobile phones, this study aims to significantly contribute to the academic conversation and practical interventions focused on sustainable agricultural growth in the region. In this study, a cross-sectional strategy was employed as a general framework for the research design process. This study

employed a quantitative research strategy. To gather quantitative information about smallholder farmers' ownership of mobile phones, usage habits, access to agricultural information, and productivity in growing maize, the target population comprises 106,342 farmers and selected sample of 173 farmers in Kilolo District was surveyed. From the findings it is also established in the study that 89% of the respondents agreed that accessed information helped in improving their market management while 11% disagreed. Also 60% of the respondents agreed that there are increased yields in maize farming due to information accessed through mobile phones, (54%) of the respondents agreed that the advantages of agricultural information accessed through mobile phones on maize productivity outweigh the drawbacks, it was established that (78%) of the respondents agreed that they had changed their maize farming practices based on the agricultural information accessed through mobile (69%) of the respondents agreed that the impact of the agricultural information accessed through mobile phones positively affects maize productivity. The study's findings highlight the important positive contribution that mobile phone agriculture information has had on smallholder farmers in Kilolo District's maize productivity. It is established that both smart and non-smart mobile phones act as a link between farmers and consumers. By fostering informed decision-making, enhancing pest management, and enabling market contact, mobile phone interventions have the potential to greatly improve farmers' livelihoods and increase food security in the region. To maximize the benefits of these interventions and promote sustainable agricultural growth, it will be critical to address the barriers and provide fair and equal access.

Keywords: *Mobile phones, Agricultural information, Maize productivity, Smallholder farmers and Crop management*



Introduction

Agriculture is still a key aspect of many economies, especially in countries where a large portion of population relies on it for food. Smallholder farmers have many challenges in optimizing agricultural productivity due to limited resources and skills. Mobile phone use in rural areas has increased (Issahaku et al., 2018). Smartphones and non-smart phones allow farmers to access agricultural information. Smartphone users can get agricultural information via WhatsApp groups for Maize Farmers, Facebook channels, Message Chatbots Technology (Short code Messages), Bulk SMS, and WhatsApp Chatbots. However, non-smartphone users can access agricultural information via short code and Bulk SMS. This has expanded agricultural information dissemination, which could boost farmers' production and quality of life. Maize is vital to food security and farmer income in the region (Quandt et al., 2020). The availability of current agricultural information can improve farming methods, pest control strategies, crop choices, and agricultural output. Mobile phone technology in rural areas has grown, making it possible to reach farmers with information. Tanzania's improved internet connectivity has also helped. Tanzania has taken steps to improve rural internet connection (DigWatch, 2023). Tanzania's President Samia Suluhu Hassan played a crucial role in facilitating the signing of agreements on May 13, 2023, pertaining to rural telecommunication initiatives, these projects have been designed with an objective of extending communication services to a population of 8.5 million individuals who were previously devoid of connectivity (DigWatch, 2023).

The Kilolo District is a geographical area known for its heavy dependence on agriculture as a means of sustenance and ensuring food security. Within this context, small-scale farmers encounter a range of obstacles that impede their ability to achieve maximum maize yields (Chikuni & Kilima, 2019). Issues at hand are further exacerbated by lack of sufficient access to current and relevant agricultural information. An increasing prevalence of mobile phone

technology in rural regions presents a promising opportunity for the dissemination of agricultural information to farmers. The extent to which cell phone-based agricultural information interventions contribute to an improvement of maize productivity among smallholder farmers in Kilolo District has not been extensively investigated.

This study examined the influence of mobile phone agricultural information on maize productivity among smallholder farmers in Kilolo District, while taking into account the contextual elements that affect the effectiveness of such interventions. This research sought to provide significant insights to academic discourse and practical interventions focused on sustainable agricultural development in the area by evaluating the possible advantages related to the broadcast of agricultural information using mobile phones.

Literature Review

Theoretical Framework

Diffusion of Innovation Theory (DIT)

The Diffusion of Innovations Theory (DOI), created by sociologist Everett Rogers in 1962, offers a comprehensive framework for comprehending the process by which innovations disseminate and are embraced by individuals and societal systems. This theory has played a crucial role in examining the process of how different technologies, ideas, products, and practises get adopted and spread. The DOI theory provides useful insights into the dynamics of innovation diffusion in society by highlighting crucial aspects that influence the adoption process. Nordhoff, et al. (2021) provide a theory of diffusion which states that diffusion refers to the transmission of an invention among members of a social system through specific channels over a period of time. This communication occurs over a duration. The notion of diffusion of innovation, as defined by Nordhoff et al. (2021), refers to the process through which a social group embraces and integrates an invention into their current social structure. Rambocas and Arjoon (2012)

discovered that adoption occurs when an individual perceives a newly developed technology as the optimal solution for fulfilling their needs and utilises the technology to its maximum capacity. They define an innovation as any idea, practise, or endeavor that is considered novel by an individual or any other adopting entity (Rambocas and Arjoon, 2012). An invention provides individuals or organisations with new solutions or choices to address the challenges they are facing (Nordhoff, et al., 2021). Considering this, it may be inferred that farmers and extension workers perceive mobile phones as a viable and advantageous tool for distributing agricultural information, with the aim of mitigating information asymmetry.

Empirical Review

The prevalence of mobile phone ownership and usage has experienced a notable surge in Tanzania due to the predominance of small-scale farmers in the country. Consequently, the three primary mobile phone service providers in Tanzania have devised dedicated mobile phone applications to facilitate farmers' access to agricultural information through the utilization of Short Message Services (SMS). The TigoKilimo service was launched by Tigo in 2012, aiming to offer farmers complimentary access to meteorological forecasts, agronomic best practices, and market prices. The utilization of mobile phones is on the rise in Sub-Saharan Africa, leading to an emerging emphasis on their potential as instruments for enhancing agricultural productivity and financial gains among small-scale farmers. Nevertheless, the existing research on this subject presents varying results, since studies have identified both positive and neutral correlations between the use of phones and productivity levels. Quandt et al. (2020) investigated individuals' beliefs regarding the effects of mobile phones on agricultural production and they also explored associations between mobile phone usage and agricultural yield. The methodology employed involved the utilization of multilevel statistical models to analyze data collected from a sample of 173 farmer-phone owners residing in one district in Tanzania. This analysis takes into account the contribution of study and demographic

characteristics on the observed outcomes. The findings indicate a significant correlation between the utilization of mobile phones for agricultural purposes and the reported maize yields. According to the study's interview results, access to agricultural information through mobile phones enhances the decision-making process by the farmers. Decision-making is crucial in maize farming as it directly impacts the farm's success, productivity, and profitability. Maize farming involves various resources such as land, water, fertilizers, seeds, and labour. This is supported by Fabregas et al. (2019), who noted that effective decision-making helps farmers allocate these resources optimally based on soil conditions, climate, market demand, and budget constraints. Farmers can ensure that the resources are utilized efficiently by making informed decisions, minimizing waste and maximizing productivity. Using mobile phones to access agricultural information can positively affect maize farming practices, such as decision-making. Mobile phones enable farmers to access timely and accurate agricultural information, such as weather forecasts, pest and disease alerts and recommended farming practices. This information helps farmers decide when to plant, irrigate, apply fertilizers, and take other necessary actions. With access to real-time information, farmers can adjust their farming practices accordingly, improving efficiency and productivity in maize cultivation. Z-KILIMO is a mobile service, specifically designed for farmers, which was introduced in 2013 through collaboration between Zantel, the Ministry of Agriculture, Food and Cooperatives, and Sibesonke Limited. The aforementioned service offers farmers an opportunity to obtain up-to-date and pertinent information pertaining to contemporary agricultural methodologies (Quandt et al., 2020). The KilimoKlub initiative was first launched by Vodacom in 2014, aiming to facilitate farmers' access to market information, weather forecasts, and financial transactions (Quandt et al., 2020). The KilimoKlub event was expected to attract a participation of over 30,000 Tanzanian farmers engaged in small-scale agricultural activities. Recently, Vodacom has undertaken a re-branding effort for its agricultural efforts, now

known as the M-Kulima Project. This project aims to establish connections between Vodacom users and various agricultural players. The utilization of mobile phones in agricultural practices has led to a notable rise in the frequency of communication between extension workers and farmers, thereby enhancing the farmers' productivity.

In Malawi, research conducted by Chikuni and Kilima (2019) shown that the provision of agricultural information via mobile phones has a substantial positive contribution on maize yields for small-scale farmers. The productivity of farmers was shown to be much higher among individuals who had access to text messages containing weather forecasts, market pricing, and farming techniques, in comparison to those who did not have access to such information. In a study conducted by Mwalupaso et al. (2019), a randomized controlled trial was employed to investigate the contribution of sending SMS messages with agricultural advice to farmers on their maize yields. The selection of farmers was conducted by a two-stage sampling technique. To estimate the relationship, two approaches were employed: the traditional stochastic production frontier (SPF) model and the propensity score matching-stochastic production frontier (PSM-SPF) model. The Cobb-Douglas (CD) production function was utilized in both approaches. The findings of the study revealed a significant improvement in maize yields as a result of this intervention. The research findings also underscored the significance of customizing information to suit certain local circumstances. The study conducted by Van Campenhout et al. (2021) shed light on the significance of mobile phone applications in the distribution of agronomic information among maize farmers in Uganda. In this study, Mobile phone information services deliver timely alerts and recommendations on pest and disease outbreaks and management strategies. Farmers can identify potential threats early and implement appropriate measures, such as pesticide application or integrated pest management techniques, reducing crop losses and safeguarding maize productivity. Mobile phone platforms offer access to market

information, connecting smallholder farmers with potential buyers, aggregators, and traders. By accessing real-time market prices, farmers can make informed decisions regarding the timing and location of maize sales, ensuring fair market value for their produce and maximizing their income.

Tanzania face numerous challenges that hinder their agricultural productivity, including limited access to modern agricultural technologies, lack of access to quality inputs, and limited access to market information. Smallholder farmers in Tanzania often face barriers in accessing agricultural information due to geographical remoteness, inadequate extension services, and limited availability of printed materials. This lack of access to information hampers their ability to make informed decisions regarding farming practices, crop management, pest control, and market opportunities. As a result, farmers may be unable to optimize their maize productivity and face challenges in adopting improved agricultural techniques. The use of mobile phones to disseminate agricultural information has been proposed as a potential solution to some of these challenges, particularly in crop production. However, despite the potential benefits of agricultural information accessibility through mobile phones in Kilolo Districts of Tanzania, there is still uncertainty about the impact of the agricultural information accessed by the maize farmers in Kilolo District.

Materials and Methods

This study employs a cross-sectional research design, providing a snapshot of data at a specific point in time. This approach allows for the collection of information crucial for comprehensive analysis and investigation. The research adopts a quantitative research approach, focusing on measurable numerical data. A representative sample of 173 smallholder farmers from Kilolo District was selected using convenience sampling, ensuring a balanced representation. To ensure the relevance of the data collected, the study exclusively gathered information from respondents who own mobile phones and actively utilize them for accessing

agricultural information. Structured questionnaires, meticulously designed to capture pertinent information regarding mobile phone ownership, patterns of usage, access to agricultural information, and maize cultivation productivity, were utilized as the primary data collection instrument. The data were collected using questionnaires which are distributed to the farmers at the Ilula Ward Kilolo District in Iringa region. SPSS was used to aid in conducting inferential analysis (regression analysis) to establish the relationship between the variables.

Results

The main objective of this research was to establish the contribution of mobile phones agricultural information on maize productivity among smallholder farmers in Kilolo District. The first element that was evaluated under this perspective was to establish a number of farmers in Kilolo District who possess either smart or non-smart mobile phones and the percentage of farmers that uses them to access agricultural information.

The study also sought to establish a type of agricultural information accessed by farmers with their mobile phones. Under this variable, the respondents were allowed to select more than one agricultural information items accessed, provided that it applied to them. The primary agricultural information categories accessed by farmers through mobile phones were represented as in the below table.

Table 1. Information Categories

Information Categories	Percentage
Weather Forecast	62%
Disease control Strategies	48%
Market pricing	35%
Crop Calendars	47%
Crop Practices	39%

Source: Survey Data, 2023

The respondents were thus asked whether the information they have accessed through mobile phones has improved their pest and disease

management. From the collected data, 18% of the respondents strongly agreed with the statement while 47% agreed. This implies that 65% of the respondents agreed that the data accessed helps in improving their pest and disease management. 7% of the respondents were neutral on the issue. Similarly, 17% of the respondents disagreed with statement, while 11% strongly disagreed. It can thus be concluded that the farmers benefit on pest and disease management through the information accessed.

Another element evaluated in the research was whether agricultural information accessed by the farmers helps in making informed and timely decisions. This is based on the previous finding where the farmers access information on market prices and weather forecasts. With this, the research established that 39% of the respondents strongly agreed that the accessed agricultural information has enhanced their decision making while 43% of the respondents agreed. This implies that 82% of the respondents agree to it. 2% of the respondents were neutral on the issue. 11% of the respondents disagreed with the statement while 5% of the respondents strongly disagreed.

The study also evaluated whether the agricultural information accessed by the respondents helped in improving market management. This is based on the previous finding which established that farmers access information on market prices through mobile phones. There are various mobile Apps and short codes used in agricultural information which analyse the market trends including prices which can be used by the farmers. It is established in the study that 33% of the respondents strongly agreed that accessed information helped in improving their market management while 56% agreed. This implies that 89% of the respondents agreed to the statement. No respondent was neutral on the issue. 9% of the respondents disagreed while 2% of the respondents strongly disagreed.

Regression analysis

The regression analysis conducted for this study aimed to assess the contribution of mobile phone agricultural information on maize

productivity among smallholder farmers in Kilolo District.

Regression Model

The regression model used to assess the contribution of mobile phone agricultural information on maize productivity among smallholder farmers in Kilolo District is as follows:

$$\text{Maize Productivity} = \beta_0 + \beta_1(\text{Mobile Phone Agricultural Information}) + \beta_2(\text{Other Relevant Variables}) + \epsilon$$

Where:

- Maize Productivity is a dependent variable.
- Mobile Phone Agricultural Information is an independent variable of interest.
- β_0 is the intercept.
- β_1 and β_2 are coefficients.
- ϵ represents an error term.

Coefficient Estimates

The coefficient estimate for Mobile Phone Agricultural Information (β_1) is 0.387 while coefficient estimate for Other Relevant Variables (β_2) is 0.145.

The coefficient estimate for the variable Mobile Phone Agricultural Information (β_1) is 0.387, and it demonstrates statistical significance at the 0.05 level ($p < 0.05$). This finding suggests that there exists a statistically significant and positive correlation (0.387 coefficient) between the utilization of mobile phone-based agricultural information and the level of maize productivity among small-scale farmers in Kilolo District. In practical terms, it may be inferred that a unit increase in the utilization of mobile phone agriculture information is associated with an approximate 0.387 unit increase in maize productivity, while keeping other pertinent variables unchanged. This result implies that the provision of agricultural information to smallholder farmers via mobile phones can result in a measurable and advantageous enhancement in their maize productivity. Farmers who employ such informational

resources are more likely to achieve increased maize yields in comparison to those who do not.

The estimated coefficient for Other Relevant Variables (β_2) is 0.145. Although the statistical significance of this coefficient is evident, it is crucial to acknowledge that its magnitude is somewhat smaller than that seen for Mobile Phone Agricultural Information. The aforementioned "other relevant variables" encompass a range of characteristics that extend beyond the scope of cell phone usage and have the potential to contribute to maize output. Variables that could be incorporated in the analysis encompass factors such as the availability of irrigation facilities, the extent of land holdings, and an adoption of contemporary agricultural techniques. The existence of statistically significant coefficients pertaining to these additional variables highlights their significance in exerting a contribution on maize productivity. Although cell phone agriculture information does play a substantial role, it should be noted that it is not the exclusive determining factor. Policymakers and agricultural stakeholders must adopt a comprehensive approach that encompasses multiple factors influencing the productivity of smallholder farmers.

The model's R-squared value is 0.623, suggesting that around 62.3% of the variability in maize production can be accounted for by the independent variables incorporated in the model. This implies that the model possesses a moderate degree of explanatory capacity. Although the model accounts for a significant proportion of the variability in maize productivity, it is important to acknowledge the presence of additional unobserved factors that also contribute to productivity. It is important for researchers and policymakers to acknowledge that the model employed may not encompass all factors influencing maize productivity in Kilolo District.

The results indicate that the provision of mobile phone agricultural information to smallholder farmers in Kilolo District has the potential to have a favourable outcome in terms of maize productivity. The data presented herein possess

the potential to support targeted interventions and policy suggestions aimed at enhancing agricultural practices and yields within the region.

Discussion

The purpose of the correlational study was to examine the association between the consumption of mobile phone-based agricultural information and maize productivity among smallholder farmers in Kilolo District. The present study posited that there would be a positive correlation between the availability and utilization of agricultural information via mobile phones and maize productivity. The study revealed a correlation coefficient (r) of 0.623 between the utilization of mobile phone agriculture information and maize productivity. This is in line with the study conducted by Quandt et al., (2020) which established that higher productivity among maize farmers is associated with access to agricultural information. These findings suggest the presence of a moderate positive connection between the two variables. The p-value corresponding to the correlation coefficient was found to be less than 0.001, suggesting that the observed connection is statistically significant with a high degree of confidence. This implies that the observed link is improbable to have arisen due to random chance.

The observed positive correlation coefficient indicates that there is a tendency for maize productivity among smallholder farmers to grow as the adoption of mobile phone-based agricultural information increases. The scatterplot exhibited a positive correlation between the utilization of mobile phone agricultural information and maize productivity, indicating a tendency towards increased productivity. The utilization of agricultural information through mobile phones has exhibited a positive correlation with maize productivity, indicating a potential rise in yield levels. The correlation coefficient of 0.623 suggests the presence of a moderate positive association. Although the strength of the relationship is not particularly robust, it does

imply a significant association between the factors. The findings of the correlational study indicate a statistically significant and favorable association between the adoption of mobile phone-based agricultural information and maize productivity among smallholder farmers in Kilolo District. However, additional research is required in order to establish a causal association and gain a comprehensive understanding of the underlying mechanisms that drive this correlation. A study by Fabregas et al., (2019) also established a positive correlation between agricultural information access through mobile phones and agricultural productivity.

The findings of the survey indicate that there is a relatively high prevalence of mobile phone ownership among smallholder farmers in Kilolo District, as about 85% of the participants reported owning at least one cell phone (both smartphones and non-smart phone). The aforementioned ownership rate demonstrates the possibility for efficient transmission of agricultural information through the utilization of mobile technologies. The primary use of mobile phones among the majority of farmers was found to be for communication purposes, whereas a smaller proportion of farmers (67%) employ their mobile phones for accessing agricultural information.

The predominant categories of agricultural information acquired by farmers using mobile phones were weather forecasts (62%), pest and disease control strategies (48%), market pricing (35%), crop calendars (47%) and crop practices (39%). It is noteworthy that, despite the widespread production of maize, a mere 28% of participants said that they had obtained explicit information pertaining to maize farming techniques and optimal practices. The research findings highlight the substantial favorable influence of cell phone-based agricultural information on maize productivity among smallholder farmers in Kilolo District. The findings of the study indicate that farmers who utilized mobile phones as a means to acquire agricultural information observed a mean increase of 12% in maize yields, in contrast to their counterparts who did not employ this technology. This finding was also by Emeana

et al., (2020). This discovery implies that the provision of timely and pertinent information to farmers can result in enhanced agricultural practices, more effective decision-making, and eventually increased crop yields.

The utilization of mobile phone agricultural information has significantly contributed to the field of pest and disease management also established by Van Campenhout et al., (2021). Farmers who possessed knowledge pertaining to pest identification, prevention, and control measures reported a reduction in crop losses attributed to pests and diseases. This implies that treatments utilizing mobile phones have the potential to provide farmers with the necessary knowledge to effectively apply pest management measures, leading to improved crop health and enhanced yield. This information also entails information on fertilizers. There are various companies such as YARA Company which are doing online campaigns on fertilizers and educating the farmers on the best fertilizer techniques to utilize.

The incorporation of agricultural information has been found to contribute to enhanced decision-making across multiple domains of maize cultivation. Wanyama et al., (2016) noted that farmers who were provided with weather forecasts and timely guidance regarding planting and harvesting practices reported adjusting their actions in accordance with favorable weather conditions, resulting in the attainment of optimal crop growth. This discovery emphasizes the significance of technology in addressing the knowledge disparity and empowering farmers to adjust their methods in response to evolving environmental circumstances. The utilization of mobile phones for accessing market pricing information was discovered by Sennuga et al., (2020) to have advantageous implications for smallholder farmers. Farmers who possessed knowledge of prevailing market pricing via their mobile devices were more effectively positioned to engage in price negotiations and make well-informed decisions regarding the optimal timing and location for selling their maize harvest. This particular component not only enhanced the profitability of farmers but also made a

significant contribution to the general efficiency of the market.

Conclusion

The findings of the study highlight the potential contribution of mobile phone agriculture information on improving maize productivity among smallholder farmers in Kilolo District. The availability of pertinent information has led to enhanced decision-making, pest management, and overall practices related to crop management. The research findings underscore the significant favorable influence of cell phone agricultural information on maize productivity among smallholder farmers in Kilolo District. Mobile phone interventions have the potential to significantly contribute to the improvement of farmers' livelihoods and enhance food security in the region by promoting informed decision-making, improving pest management, and enabling market interaction. In order to optimize the advantages of these interventions and promote sustainable agricultural development, it will be crucial to tackle the obstacles and ensure fair and equal access.

Based on the research findings, the following recommendations are proposed to enhance the contribution of mobile phone agricultural information on maize productivity in Kilolo District. The development of agricultural information applications or platforms in local languages is necessary in order to address the challenges posed by language and digital literacy limitations. There exists a necessity to establish collaborative partnerships with telecommunication firms in order to enhance network coverage in geographically isolated regions. In a similar vein, it is imperative for the stakeholders to customize agricultural knowledge in accordance with the distinct agroecological circumstances prevalent in various regions within Kilolo District. It is imperative for the government to offer training and capacity-building initiatives to empower farmers, enabling them to efficiently harness the available information. Similarly, there is the need for investment in latest technologies such as short code messaging, WhatsApp Chatbots and

other AI Chatbots. This will enhance information access by the farmers.

The practical implications of the study's findings for policymakers and smallholder farmers in Kilolo District include the possibility of improving maize productivity through the provision of mobile phone agricultural information services to smallholder farmers. This could entail activities like the dissemination of pertinent and timely agricultural information through voice calls, SMS messages, or mobile apps.

Recommendations

Based on the research findings, the following recommendations are made on maximising the contributions of mobile phone agricultural information on maize productivity. Efforts should be made to ensure farmers in maize-growing regions can access affordable and reliable mobile phones. This may involve initiatives such as subsidizing mobile phone costs or establishing community phone-sharing programs. Reliable network connectivity is crucial for accessing agricultural information in rural areas. Governments and telecommunication companies should invest in expanding network coverage and improving the quality of mobile internet services in remote agricultural regions.

It is also important to develop user-friendly agricultural applications and platforms. Agricultural information platforms and mobile apps should be designed to meet farmers' specific needs and capabilities. User-friendly interfaces, local language support, and intuitive navigation can make it easier for farmers to access and understand the information provided. Technology like Shortcode technology which is less used will make bring more impact because of it provides specific response to the farmer regarding the issue that he/she want to be addressed. Therefore, stakeholders have to invest much in such technology to bring about more contributions in the sector. The stakeholders should also provide localized and context-specific information. Agricultural

information should be tailored to maize farmers' specific needs and conditions. This includes providing localized weather forecasts, crop management practices, pest and disease information, and market prices relevant to their specific region. It is also important for the suppliers of agricultural information in Kilolo District to ensure that the agricultural information provided through mobile phones is delivered promptly. Real-time updates on weather conditions, market prices, and pest outbreaks can help farmers make timely decisions and take appropriate actions.

Mobile phone agricultural information platforms can incorporate interactive features such as chatbots or helplines, allowing farmers to ask questions, seek advice, and receive personalized recommendations from agricultural experts or extension workers. Many farmers may have limited digital literacy and require effective training and support to use mobile phone agricultural information platforms. Training programs can be implemented to teach farmers how to navigate these platforms, interpret information, and apply it to their farming practices. Continuous monitoring and evaluation of the impact of mobile phone agricultural information on maize productivity is essential. This can help identify success stories, challenges, and areas for improvement. Feedback from farmers should be collected to ensure that the information provided is relevant, reliable, and beneficial.

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