Review Article

Impact of Mobile Technology on Extension Service Delivery in Remote Farming Communities-A review

Abstract

This scientific paper presents an in-depth analysis of the integration of mobile technology in agricultural extension services, illustrating its pivotal role in revolutionizing information dissemination and management in agriculture. It commences with a detailed overview of various mobile technologies such as smartphones, SMS, voice messaging, and mobile internet, and their profound impact on the agricultural sector. The study progresses to examine diverse modes of technology delivery, including direct communication methods like voice calls and SMS, multimedia approaches like videos and podcasts, and interactive services such as chatbots and forums. This is followed by an evaluation of the impact of these technologies on extension service delivery, focusing on their reach, speed, cost-effectiveness, and resource utilization, and how they compare to traditional extension methods. The paper provides empirical insights through case studies and real-world examples, including successful implementations like Kenya's M-Kilimo service and more challenging projects like Nigeria's AgroMobile, offering a nuanced understanding of the factors influencing success and failure. A comparative analysis is conducted to contextualize the use of mobile technology in agricultural extension services globally, considering different socio-economic and technological environments. The study concludes by exploring emerging trends and future innovations in mobile technology, such as artificial intelligence (AI) and the Internet of Things (IoT), and proposes strategic recommendations for enhancing its application in extension services. These recommendations include advancing digital literacy, tailoring technology to local contexts, and fostering supportive policy environments. This comprehensive examination underscores mobile technology's critical role in advancing agricultural practices, enhancing farmer engagement, and contributing to sustainable agricultural development.

Keywords:*Mobile, Technology, Extension, Innovation, Communication Digital*

Comment [WU1]: The author is encouraged to incorporate a theoretical foundation when constructing the Framework for Thought. It is advisable for authors to elucidate the rationale behind the selection of review articles and the presentation of case studies. Providing a clear explanation of these choices contributes to the scholarly robustness of the work.

Comment [WU2]: It is imperative to formulate research problems meticulously and explicitly outline research objectives. A comprehensive explanation of the chosen research methodology is warranted.

Comment [WU3]: Technology delivery or delivery information?

Introduction

Agricultural extension services play a crucial role in modern agriculture, acting as a bridge between research and farming practices. They are defined as a series of educational activities, often provided by government agencies, NGOs, or agricultural institutions, aimed at providing information and technical assistance to farmers [1]. These services include advising farmers on best practices, introducing innovative technologies, and disseminating research findings relevant to agriculture [2].

Extension services are instrumental in enhancing agricultural productivity, improving food security, and promoting sustainable farming practices [3]. They are particularly vital in rural areas where access to information and new technologies is limited. By offering tailored advice and solutions, extension services help farmers overcome challenges related to crop production, pest management, and market access, thus contributing to rural development and poverty reduction [4].Remote farming communities are often characterized by their geographical isolation, limited infrastructure, and lack of access to markets and services [5]. These communities typically have small-scale farms and rely heavily on agriculture for their livelihood. Limited access to information and resources is a common challenge, often compounded by socio-economic factors such as poverty and low literacy levels [6].Traditional extension services often struggle to reach remote farming communities due to logistical difficulties and resource constraints [7]. The high cost of travel, limited personnel, and the diverse needs of scattered rural populations pose significant challenges [8]. Additionally, conventional extension methods may not effectively address the specific needs of these communities, leading to a gap in service delivery [9].Mobile technology has emerged as a transformative tool in agriculture, offering new opportunities for information dissemination and communication [10]. The use of mobile phones, smartphones, and associated applications in farming activities has become increasingly prevalent, enabling farmers to access real-time information, market prices, weather forecasts, and agronomic tips [11].The integration of mobile technology in agriculture began in the early 2000s with the proliferation of mobile phones and the advent of GSM networks in rural areas [12]. Initial applications were simple, often limited to voice calls and text messages. With the advancement of mobile internet and smartphone technology, a wide array of agricultural apps

Comment [WU4]: In addition to highlighting the limitations of traditional extension methods, it is essential to delve into the current circumstances of the farmers themselves. This ensures a comprehensive examination, addressing not only the constraints of extension services but also the prevailing conditions experienced by the farmers.

Comment [WU5]: The formulation of a precise research problem is imperative to underscore the significance of this study, specifically addressing the disparities between real-world conditions and ideal scenarios. Furthermore, research objectives should be explicitly delineated in alignment with the identified problem.

Comment [WU6]: A comprehensive elucidation of past initiatives or the absence thereof is essential to contextualize the research. This clarification will clarify the novelty or improvement that this research represents in the realm of extension services, particularly in remote communities.

and services have been developed, ranging from precision farming tools to online marketplaces for agricultural products [13].This review aims to systematically examine the impact of mobile technology on extension service delivery in remote farming communities. It seeks to identify how mobile technology has transformed traditional extension practices, addressing the challenges faced in reaching remote farmers and enhancing the effectiveness of these services.The review encompasses a wide range of literature, including peer-reviewed articles, reports from agricultural organizations, case studies, and technology assessments. Sources have been carefully selected to cover diverse geographical regions and farming systems, ensuring a comprehensive understanding of the global implications of mobile technology in agricultural extension services.

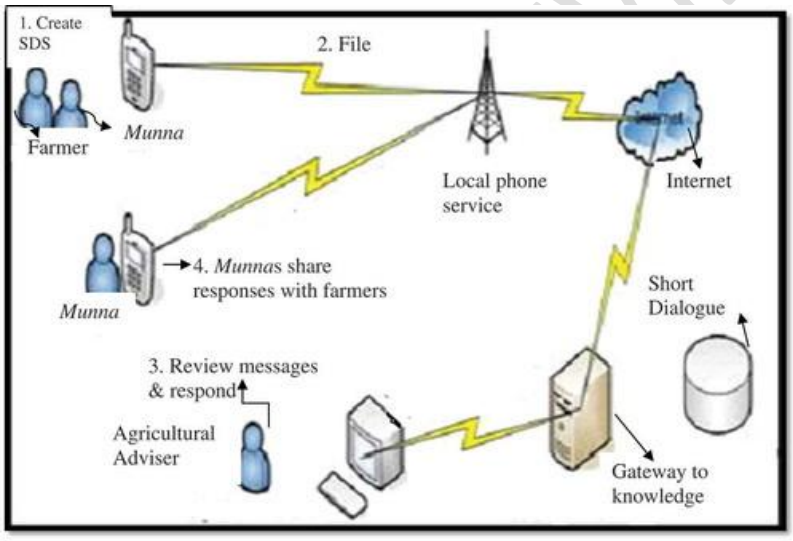

Image 1: Impact of Mobile Phone Technology on Agricultural Extension Services Delivery

Table 1:Mobile Technology Initiatives in Agricultural Extension Services in India.

Initiative Name	Technology Used	Launch Year	Description
Kisan Call	IVR, Voice	2004	Farmers call toll-free numbers to receive immediate expert advice

Comment [WU7]: Attention to adherence to the prescribed format and writing conventions is advised to enhance the overall presentation and professionalism of the manuscript.

Comment [WU8]: Consider organizing the chronological sequence of years, from the oldest to the newest, to provide a coherent temporal narrative. Additionally, specifying the geographical locations, such as remote communities in India, would augment the contextual understanding. Furthermore, detailing the impacts or outcomes of technology implementation will enrich the depth of analysis.

Centers (KCCs)	Calls		on agricultural queries.
mKisan Portal	SMS, Voice Messages	2013	A platform for sending advisories and alerts to registered farmers via SMS and voice messages in their local languages.
Kisan Suvidha App	Mobile App	2016	Provides information on weather, market prices, plant protection, input dealers, and expert advisories.
eNAM (Electronic National Agriculture Market)	Mobile App, Web Platform	2016	A pan-India electronic trading portal linking Agricultural Produce Market Committees (APMCs) across states.
AgriMarket Mobile App	Mobile App	2015	Offers information about current market prices of crops in the nearest markets.
Pusa Krishi App	Mobile App	2016	Provides farmers with agricultural advice, new varieties of crops developed by ICAR, and technologies for better farming.
Crop Insurance Mobile App	Mobile App	2016	Helps farmers manage their crop insurance needs, including policy status and information on insured crops and areas.
Agricultural Advisory Services through WhatsApp	WhatsApp Groups	2018	Utilizes WhatsApp for advisory services, real-time Q&A, and sharing updates on agricultural practices.

Digital Green	Videos, Social Media	2008	Uses videos and social media platforms to educate farmers about improved agricultural techniques and practices.
SHC (Soil Health Card) Scheme	Mobile App, Web Portal	2015	Provides farmers with soil health cards for monitoring the health of soil and getting tailored recommendations.
Agro Advisory Services by ICAR	SMS, Mobile App, IVR	2007	Offers weather-based and crop-specific advisories through various mobile technologies.
Farmers' Portal	Web Portal, Mobile Accessible	2013	A one-stop shop for all agricultural services, providing information on various government schemes and agricultural data.

Mobile Technology in Extension Services

A. Types of Mobile Technologies Used

In the realm of agricultural extension services, mobile technology has emerged as a critical tool for disseminating information, providing training, and supporting decision-making processes for farmers and agricultural professionals. The integration of mobile technology in extension services has been transformative, enhancing the reach and efficiency of these services. Below, we explore the various types of mobile technologies that have been instrumental in this sector.

Mobile Phones, Smartphones, and Applications:

Mobile phones and smartphones have become ubiquitous tools in agricultural extension services. The accessibility of these devices even in remote rural areas has made them powerful instruments for information dissemination and communication between farmers and extension workers.

Comment [WU9]: It is imperative to substantiate the feasibility of mobile technology adoption in these remote community areas, affirming that the recommendations emanating from this research are implementable. This involves elucidating the existing potential and accessibility of these remote areas, underscoring that, while the potential exists, extension workers have not explored the integration of mobile technology. A thorough exploration of the actual conditions, including challenges and possibilities, is requisite.

Comment [WU10]: What empirical evidence supports the efficacy of counseling through modern technology? Clarification based on the results and the supporting data is essential for establishing credibility.

Comment [WU11]: The foundation upon which the conclusions are drawn must be explicitly stated, with particular emphasis on the source of the data and its implementation in the designated area. The results obtained need to be presented.

Smartphones and Applications: Smartphones, with their advanced capabilities, enable the use of various agricultural apps. These apps can offer a range of services from weather forecasts, market prices, to crop management advice. For instance, the app 'Plantix' allows farmers to diagnose plant diseases using image recognition technology [14].

Basic Mobile Phones: In areas where smartphones are less prevalent, basic mobile phones still play a significant role. These devices are primarily used for voice calls and SMS, offering a direct and efficient means of communication.

1. ***SMS and Voice Messaging Services***

SMS (Short Message Service) and voice messaging have become prominent tools in the field of agricultural extension. Their simplicity and low-cost nature make them accessible to a wide range of farmers, including those in low-income and remote areas.

SMS-Based Services: Services like 'WeFarm' allow farmers to send questions via SMS and receive crowdsourced answers from other farmers around the world [15]. This peer-to-peer knowledge sharing model is particularly effective in areas lacking internet connectivity.

Voice Messaging Services: Voice services are crucial in regions with low literacy rates. Interactive voice response (IVR) systems provide information in local languages, which can be more inclusive for farmers who are not literate or are not comfortable with text-based information. An example includes the service provided by Digital Green, which uses voice messaging to disseminate agricultural advice [16].

2. ***Mobile Internet and Agricultural Information Portals***

The proliferation of mobile internet has opened up new avenues for information dissemination in agricultural extension services. Mobile internet allows farmers to access a wealth of information through agricultural information portals.

Agricultural Portals: Websites and online platforms like 'AgriFin Mobile' offer a suite of services including access to market data, weather forecasts, and agronomic

tips. These portals often provide tailored information that can be accessed on-demand by farmers [17].

Impact of Mobile Internet: The advent of mobile internet has also facilitated the use of social media and online communities where farmers can interact, share experiences, and learn from each other. This peer-to-peer interaction enhances the traditional extension services by providing a platform for collaborative learning and support.

B. Modes of Delivery in Mobile Extension Services

The delivery of agricultural extension services via mobile technology encompasses various modes, each with its unique advantages and suitability depending on the target audience and the nature of information being disseminated.

1. ***Direct Communication (Voice Calls, SMS)***

Direct communication, primarily through voice calls and SMS, forms the backbone of mobile extension services. This mode is particularly effective due to its simplicity and wide accessibility.

- **Voice Calls**: Voice communication is essential, especially in regions with low literacy rates. It allows for personalized advice and instant feedback. Studies have shown that voice calls can significantly enhance the reach and impact of extension services [18].
- **SMS**: SMS-based extension services provide concise, timely information such as market prices, weather forecasts, and agronomic tips. The success of SMS services in extension is attributed to their low cost and high penetration even in remote areas [19].

2. ***Multimedia (Videos, Podcasts)***

The use of multimedia, such as videos and podcasts, in agricultural extension is gaining popularity due to its ability to convey complex information in an engaging and understandable manner.

- **Videos**: Video-based extension services, like those offered by Digital Green, have proven effective in demonstrating agricultural practices. Videos can

showcase practical demonstrations, making it easier for farmers to understand and adopt new techniques [20].

- **Podcasts**: Podcasts are emerging as a convenient way for farmers to access information. They can be easily downloaded and listened to at the farmer's convenience, providing flexibility in learning [21].

3. **Interactive Services (Chatbots, Forums)**

Interactive services such as chatbots and online forums represent the evolving landscape of extension services. These platforms provide a two-way communication flow, allowing for more personalized and responsive service delivery.

- **Chatbots**: AI-driven chatbots can provide instant, automated responses to farmers' queries. They are becoming increasingly popular due to their ability to handle a large volume of inquiries simultaneously [22].
- **Forums**: Online forums and community groups enable peer-to-peer interaction. Farmers can share experiences, solutions, and innovations, fostering a collaborative learning environment [23].

C. Accessibility and Adoption in Remote Communities

The penetration and successful adoption of mobile technology in remote communities are fundamental for the efficacy of mobile-based extension services. In rural areas, the significant penetration of mobile technology has been primarily driven by the decreasing costs of mobile devices and the expansion of network coverage. This trend, highlighted by Krell et al. [24], has led to the widespread adoption of both basic mobile phones and increasingly affordable smartphones in these communities. The adoption of mobile technology by farmers is influenced by several key factors. Literacy and digital skills are crucial, as the level of literacy among farmers affects their ability to effectively use these technologies, with simplified interfaces and local language support enhancing usability [25]. The cost of devices and the availability of reliable network connectivity also play a significant role, where subsidized rates and government support can improve access [26]. The perceived benefits of technology, such as increased productivity and income, are influential in driving adoption [27]. Finally, cultural and social

factors, including the acceptance of technology within the community and the role of community leaders and local champions, are essential for wider technology adoption and acceptance, as noted by Kamal*et al*. [28]. These factors collectively determine the extent to which mobile technology can be effectively utilized in agricultural extension services in rural and remote areas.

Table 2: Mobile Technology Applications in Agricultural Extension Services in India

Technology	**Application/Service**	**Description**
SMS (Short Message Service)	Advisory Services	Farmers receive text messages with advice on farming practices, weather forecasts, pest control, and market prices.
IVR (Interactive Voice Response)	Information Dissemination	Delivers pre-recorded messages in local languages to provide agricultural tips, weather alerts, and market information.
Mobile Apps	Comprehensive Agri-Services	Apps like Kisan Suvidha, Pusa Krishi provide information on weather, market prices, plant protection, agro-advisory, etc.
USSD (Unstructured Supplementary Service Data)	Query-based Information	Enables farmers to access information by dialing specific codes. Useful in areas with limited internet connectivity.
WhatsApp Groups	Peer-to-Peer Learning & Expert Consultation	Facilitates communication among farmers and experts for sharing knowledge, experiences, and addressing specific queries.
GIS (Geographic Information	Precision Agriculture	Used for soil health mapping, crop suitability, and precision farming

Comment [WU12]: Source of table?
The absence of demonstrated measurable impacts raises questions about the effectiveness of the interventions. The inclusion of numerical data, figures, and percentages would greatly enhance the measurability aspect.

Systems)		guidance.
Voice Messages & Calls	Outreach to Non-Literate Farmers	Disseminates information via voice for farmers who are unable to read SMS or use apps.
Social Media Platforms	Community Building & Information Sharing	Platforms like Facebook and YouTube are used for sharing success stories, best practices, and creating farmer communities.
E-Learning Platforms	Capacity Building & Training	Offer online courses and resources for skill development and advanced agricultural practices.
Agricultural Drones	Crop Monitoring & Aerial Surveillance	Used for crop monitoring, assessing crop health, and spraying pesticides or nutrients.
Blockchain Technology	Traceability & Supply Chain Management	Emerging use for ensuring transparency and traceability in the supply chain, from farm to consumer.
IoT (Internet of Things)	Smart Farming	Includes sensors for soil moisture, weather stations, and automated irrigation systems for precision agriculture.

Impact on Extension Service Delivery

The integration of mobile technology in extension services has had a profound impact on the way agricultural information is disseminated and managed. This impact can be seen in various aspects, from the reach and speed of information delivery to the cost-effectiveness and resource utilization.

A. Information Dissemination and Knowledge Sharing

Comment [WU13]: Concrete evidence showcasing the tangible results achieved in the field is necessary to validate the claims made in the manuscript.

1. **Effectiveness in Reaching Wider Audiences**

Mobile technology has significantly expanded the reach of extension services, overcoming geographical and logistical barriers. Studies have shown that mobile-based extension services can effectively reach a broader and more diverse audience compared to traditional methods. Dlodlo, & Kalezhi [20] noted that mobile phones' widespread adoption in rural areas has created unprecedented access to information and advisory services for farmers who were previously isolated or marginalized.

2. **Speed and Timeliness of Information Delivery**

The speed and timeliness of information delivery via mobile technology are unparalleled. Farmers can receive real-time updates on market prices, weather forecasts, and pest alerts, enabling them to make prompt and informed decisions. This immediacy is critical in agriculture, where timing can significantly impact productivity and income. A study by Atiso*et al*.,[30] highlights how SMS and voice message services have improved the timeliness of information, allowing farmers to respond quickly to changing conditions.

B. Cost-Effectiveness and Resource Utilization

1. **Comparison with Traditional Extension Methods**

When compared to traditional methods, mobile technology offers a more cost-effective way to deliver extension services. Traditional extension often involves physical travel and one-on-one consultations, which are resource-intensive. In contrast, mobile technology enables the delivery of information to a large number of farmers simultaneously, reducing per-capita costs. A study by Qiang et al. [31] emphasizes the efficiency gains achieved through mobile extension services, citing lower operational costs and broader reach.

2. **Impact on the Budgets of Farming Communities and Service Providers**

The adoption of mobile technology in extension services has a positive impact on the budgets of both farming communities and service providers. For farmers, the reduced need to travel to access information or attend training sessions translates into cost savings. For service providers, mobile technology enables more efficient resource utilization and potentially lower operational costs.

Comment [WU14]: To bolster measurability, the inclusion of specific numbers, data points, and percentages is essential.

Comment [WU15]: There is a conspicuous absence of details regarding the actual outcomes witnessed in the field, which should be explicitly addressed to reinforce the validity of the study.

C. Enhancing Farmer Engagement and Participation

The incorporation of interactive features in mobile technology plays a significant role in enhancing farmer engagement. Tools such as SMS queries, mobile apps, chatbots, and interactive voice response systems allow farmers not only to receive information but also to actively participate in knowledge exchange [32]. For instance, chatbots and mobile applications often include features for farmers to ask specific questions, to which they receive tailored advice. These interactive features significantly increase user engagement, as they provide a platform for two-way communication, making the extension services more responsive and user-centric.

1. **Case Studies or Examples of Successful Farmer Participation**

Successful case studies exemplify the impact of interactive mobile technologies in agricultural extension. One notable example is the use of the mAgri app in Kenya, which allows farmers to access market information, weather updates, and agronomic tips, leading to increased participation in agricultural markets [33]. Another example is the Esoko platform in Ghana, which combines SMS services with a call center, enabling farmers to receive personalized advice and market information, thus boosting their participation in agricultural decision-making processes [34].

Comment [WU16]: The manuscript lacks a detailed exposition on the condition of the farmers, the implementation process, and the metrics employed for gauging results. This information is crucial for ascertaining the true remoteness of the areas under consideration.

D. Challenges and Limitations

1. **Technological Barriers in Remote Areas**

Despite the advancements in mobile technology, significant technological barriers exist in remote areas. These include limited network coverage, low bandwidth, and the unavailability of advanced mobile devices. Such barriers hinder the effective delivery and utilization of mobile-based extension services in these regions.

Limitations in Content and Language

The effectiveness of mobile extension services is also limited by content and language barriers. Often, the content provided through these platforms is not tailored to the local context or is not available in local languages, making it less accessible to farmers with limited literacy or those who are not proficient in official or international languages. The importance of localizing content and

providing it in vernacular languages to enhance comprehension and usability has been emphasized in multiple studies, includingthose Rouet [35] who stress the need for linguistic and cultural customization in mobile applications for agriculture.

Case Studies and Real-World Examples

1. Detailed Examination of Successful Implementations

- e-Choupal Initiative: India has witnessed the success of the e-Choupal initiative by ITC. Launched in the early 2000s, e-Choupal provided internet kiosks in rural areas, allowing farmers to access a wealth of information on weather forecasts, market prices, and agricultural best practices [36]. This initiative significantly improved the decision-making abilities of Indian farmers.

2. Impact Assessments and Long-Term Outcomes

- Increased Market Access and Incomes: The e-Choupal initiative led to increased market access for farmers and higher incomes. By providing information on market prices, it helped farmers to negotiate better deals, thereby increasing their earnings and reducing the hold of traditional middlemen.

Comparative Analysis with Other Regions or Technologies

A. Global Perspectives

1. **Comparisons with Extension Service Delivery in Other Countries**

The use of mobile technology in agricultural extension varies significantly across different regions, influenced by factors like technological infrastructure, economic conditions, and cultural practices. For instance, in India, the e-Choupal initiative revolutionized extension services by providing internet kiosks in rural areas [37].

B. Comparison with Other Technologies

1. **Mobile Technology Versus Traditional and Other Modern Methods**

Traditional extension methods, like face-to-face interactions and print media, while effective, often lack the scalability and immediacy of mobile technology. On the other hand, mobile solutions offer broader reach and real-time communication but may lack the personal touch of traditional methods. Comparatively, modern methods like web portals and AI-driven analytics platforms offer advanced functionalities but require more sophisticated infrastructure and user capabilities [38].

2. **Synergies and Integrations with Other Technological Advancements**

Mobile technology often works best when integrated with other technological advancements. For example, combining mobile services with GIS (Geographic Information Systems) can enhance precision agriculture practices, while integration with blockchain technology can improve supply chain transparency and traceability [39]. Such synergies not only enhance the effectiveness of mobile technology but also extend its benefits to more complex and diverse agricultural challenges.

Future Directions and Recommendations

Comment [WU17]: The provision of both short-term and long-term recommendations would contribute to a more comprehensive and nuanced set of suggestions.

A. Emerging Trends and Innovations

1. **Predictions for New Technologies and Methodologies**

The future of mobile technology in agricultural extension services is likely to be shaped by several emerging trends. One significant trend is the integration of artificial intelligence (AI) and machine learning (ML) with mobile applications, offering more personalized and precise farming advice [42]. Additionally, the Internet of Things (IoT) is expected to play a crucial role, with sensors and smart devices providing real-time data on soil health, crop conditions, and climate, accessible directly via mobile devices [43].

2. **Potential Impact on Extension Services and Farming Practices**

These technological advancements are poised to profoundly impact extension services and farming practices. AI and ML can enable predictive analytics for pest outbreaks or crop diseases, allowing for proactive measures. IoT integration can

lead to more efficient resource use, such as optimized water usage and targeted fertilizer application, leading to sustainable farming practices [44].

B. Recommendations for Policy and Practice

To bolster the use of mobile technology in extension services, several strategic recommendations can be implemented for policy and practice. Firstly, investing in digital literacy is crucial, with training programs aimed at enhancing farmers' digital skills to foster greater adoption and effective utilization of mobile technologies [45]. Secondly, the development of user-centric mobile solutions is essential. Tailoring these solutions to meet the specific needs and contexts of various farming communities can significantly enhance their relevance and effectiveness [46]. Lastly, promoting public-private partnerships is key to advancing this domain. Collaborative efforts between governments, technology providers, and agricultural organizations can lead to the creation of more robust, scalable, and efficient mobile solutions [47]. These combined efforts can substantially improve the impact and reach of mobile technology in agricultural extension services

Policy Recommendations for Governments and Agricultural Organizations

Governments and agricultural organizations hold a crucial role in promoting the adoption of mobile technology in extension services. They can achieve this by creating enabling policies that support infrastructure development, crucial for improved rural connectivity and broader access to mobile devices, as emphasized [48]. Additionally, investing in research and development is vital, particularly in emerging technologies like Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain, which are increasingly relevant in agriculture. This investment can lead to innovative and effective solutions in agricultural practices, [49]. As these technologies often rely heavily on data, the establishment of robust data governance frameworks is essential to ensure the privacy and security of user data, a point highlighted [50]. Collectively, these strategies can significantly enhance the effectiveness and reach of mobile technology in agricultural extension, leading to more informed and efficient farming practices.

Conclusion

Comment [WU18]: A refined conclusion is warranted, one that directly addresses the research objectives. The author is encouraged to offer more precise, specific, and operationally viable recommendations, expanding beyond broad advice to furnish practical insights.

The integration of mobile technology in agricultural extension services has revolutionized information dissemination, farmer engagement, and resource management in the agricultural sector. Successful implementations like M-Kilimo in Kenya have demonstrated the potential for enhanced productivity and income among farmers, while challenges in projects like AgroMobile in Nigeria have offered valuable lessons in infrastructure, training, and content localization. Looking ahead, emerging technologies such as AI, IoT, and machine learning promise to transform these services, making them more personalized, efficient, and sustainable. However, realizing this potential will require concerted efforts in improving digital literacy, developing user-centric solutions, and establishing supportive policy frameworks. Embracing these strategies will be pivotal in leveraging mobile technology for more effective, inclusive, and sustainable agricultural extension services worldwide.

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