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Popular article

Innovative Communication Tools in Agricultural Extension

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Abstract

In the realm of agricultural extension, innovative communication tools are catalysing a transformative shift in the way information is disseminated and received. From messaging apps to artificial intelligence, these tools redefine collaboration, bridging gaps and accelerating information exchange. While traditional methods like radio and telecentres were once prevalent in agricultural communication, the evolving landscape now necessitates modern tools viz. electronic networking, GIS, social media, data analytics and smartphone apps that play a pivotal role in efficiently disseminating innovative technologies to rural farming communities. Addressing global agricultural processes, these tools facilitate information exchange, data-driven decisions and collaborative efforts, ensuring the sustainable advancement of the agricultural sector.

Keywords: Agricultural extension, Communication, Modern media

Introduction

Agricultural communication is a specialized field focused on sharing information about agriculture among different stakeholders. It involves formal and informal channels, often facilitated by extension services and is recognized within science communication. Agricultural communicators specialize in applied science and business within agriculture, possessing specialized knowledge. It covers diverse topics like food, renewable energy and rural development, addressing all stages of agricultural processes and involving participants from scientists to consumers on a global scale (Kaur, 2022).

The growing demand for professionals specializing in communication within the agricultural domain has given rise to academic disciplines such as agricultural journalism and agricultural communication. The job market for agricultural communicators is diverse, encompassing a range of roles that require a fusion of agricultural expertise and effective



communication skills. Farm broadcasters engage in radio or television, delivering agricultural news and information to a wide audience. Journalists and editors in agricultural/rural media cover farming trends and issues for magazines and newspapers, producing informative content. Communication specialists, public relations practitioners and web developers contribute their skills to agricultural commodity organizations, businesses and non-profits, managing outreach and online presence (Noor *et. al*, 2018). Sales representatives for agricultural businesses connect with farmers, promoting and selling products such as seeds, fertilizers and equipment. Science journalists focus on communicating agricultural research and scientific advancements to the public. Communication specialists in land-grant universities disseminate research findings and educational resources. Finally, public relations or advertising professionals work with firms specializing in or having agricultural clients, creating campaigns to enhance the visibility and reputation of agricultural businesses (Poudel, 2014). Collectively, these roles highlight the diverse and crucial contributions of agricultural communicators across various sectors within the industry.

Innovative communication tools

In the dynamic field of communication, innovative tools reshape how individuals and organizations interact, transcending traditional methods. From advanced messaging apps to artificial intelligence, these tools redefine connectivity and collaboration in sectors like business, education and healthcare, bridging geographical gaps and enhancing information exchange speed (Biradar and Balamatti, 2016). Traditionally, radio, television, film strips, charts, slide presentations and telecentres were used for communicating agricultural information to local farmers in various rural areas. However, the situation has gradually changed and hence require the introduction of modern communication tools to effectively disseminate innovative technologies and information to the rural farming community.

Electronic Networking

In the contemporary era, the Internet, encompassing the World Wide Web (WWW) and email systems, serves as a global platform for communication and information sharing. In developing countries, farmers and associations are increasingly exploring the potential of Internet applications to advance their interests. E-Agriculture, provides farmers worldwide with access to knowledge on the latest technologies. Email networks empower farmers to overcome constraints, facilitating communication on national and local development issues. Although farmers now have greater access to information technologies, they remain underrepresented on most networks. Bridging the digital divide, especially for rural women, remains a challenge (Mondal, 2013).



GIS

GIS (Geographic Information System) manages and interprets data on an area's resources, used increasingly in agriculture. It involves tools for storing, managing and analyzing geographically referenced data. GIS provides insights into global issues like human settlement patterns and agricultural performance. GIS aids farmers in analyzing data for crop growth, making decisions on seed quantity, planting locations and fertilizer use, contributing to increased production and cost reduction worldwide.

Social Networking Sites

The advent of social networking sites like WhatsApp, Facebook, LinkedIn and Twitter has ushered in a new era for agricultural communication. These platforms enable the sharing and dissemination of modern agricultural technologies, bringing together farmers and experts. Social networking groups and circles are formed, fostering communication among farmers with specific expertise (Bhattacharjee and Raj, 2016).

Rural Telecentres

Development agencies utilize Rural Telecentres to extend Internet access to rural communities and intermediary organizations. These shared facilities provide telephone, fax and Internet services, along with equipment like cassette players and computers. Telecentres offer communities access to external knowledge, integrating it with local wisdom. They serve various purposes, including collecting information for public awareness programs, obtaining distance learning materials and sharing locally developed agricultural solutions with similar communities facing similar challenges and agroecological conditions

Decision support systems (DSS)

DSS are instrumental in modern agriculture, offering valuable insights and data-driven guidance for farmers and stakeholders. These systems contribute to various aspects of farming operations, including crop planning, weather monitoring and pest management. By analysing factors such as soil conditions, climate and market demand, DSS assists in optimal crop selection and planting schedules. Real-time weather data integration enables informed decisions on irrigation, pest control and harvesting, while predictive modelling helps assess risks associated with extreme weather events. Precision agriculture benefits from DSS by optimizing the use of resources like water, fertilizers and pesticides, with sensor data and satellite imagery facilitating precise decision-making at the field level. Market analysis, price forecasting and supply chain optimization are additional areas where DSS provides crucial support. As technology advances, the incorporation of IoT, artificial intelligence and machine learning further enhances the sophistication and responsiveness of decision support systems in agriculture.



Expert systems

They play a pivotal role in modern agriculture, offering computerized decision-making that mirrors the expertise of human specialists. These systems are integral to various facets of farm management, from diagnosing crop issues to optimizing resource allocation in precision farming. Expert systems contribute to livestock management by providing guidance on nutrition and healthcare and they analyse meteorological data for real-time weather forecasts and climate predictions. In soil management, these systems recommend fertilization plans based on soil characteristics. They also support equipment maintenance by predicting potential issues and suggesting maintenance procedures. Expert systems aid in strategic decision-making for overall farm planning, considering market trends, financial aspects and regulatory requirements.

Chatbots and virtual assistants

In agriculture, chatbots and virtual assistants play pivotal roles by providing farmers with real-time guidance on crop cultivation, personalized advice based on weather conditions and insights into market trends for informed selling decisions. Equipped with image recognition, these technologies identify and offer solutions for plant diseases and pests. They guide farmers in adopting precision agriculture practices, optimizing resource utilization.

Data analytics platforms

Data analytics platforms are pivotal in modern agriculture, leveraging advanced tools and algorithms to transform agricultural data into actionable insights. These platforms enable precision farming by analysing data from sensors and satellites, optimizing resource allocation for water, fertilizers and pesticides. Farmers benefit from real-time crop monitoring, weather predictions and market intelligence for informed decision-making. Integrating IoT devices enhances monitoring across various farming operations. Financial analysis, predictive analytics for crop yields and disease forecasting contribute to efficient farm management. These platforms also optimize the agricultural supply chain, analysing logistics and market trends. In essence, data analytics platforms play a central role in driving sustainable and productive farming practices by translating complex data into practical solutions for farmers and stakeholders.

Apps

Smartphone apps have become indispensable tools in agriculture, offering farmers a range of benefits. They provide real-time weather forecasts, support precision farming through GPS integration and assist in crop management by offering insights on planting schedules and pest identification. Market information apps aid farmers in strategic decision-making, while



financial management apps help with budgeting and expense tracking. Livestock monitoring and soil health analysis apps contribute to optimal farming practices. Additionally, educational apps offer training and tutorials and apps for remote monitoring enhance overall farm management. The convenience and accessibility of these apps empower farmers with valuable information, promoting efficiency and sustainability in agriculture.

Conclusion

In conclusion, innovative communication approaches in agricultural extension are essential for enhancing efficiency, sustainability and knowledge transfer in farming. The integration of modern technologies, collaborative efforts and multimedia content plays a pivotal role in addressing challenges, fostering community engagement and promoting sustainable practices. As the agricultural sector evolves, these approaches become imperative for ensuring global food security and the resilience of farming communities.

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