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Role of ICT’s in Agriculture

Abstract:

Information and Communication Technologies (ICTs) have revolutionized agriculture by enabling precision farming, improving supply chain management, enhancing market access, and facilitating knowledge dissemination. This article explores the significant impact of ICTs in these areas, leading to increased efficiency, productivity, and sustainability in agriculture. It also highlights the challenges and provides recommendations to maximize the benefits of ICTs in the agricultural sector. The impact of technologies such as precision farming, IoT devices, data analytics, and mobile applications on agricultural development is discussed.

Introduction:

Agriculture is known as the primary sector of the Indian economy because of over a 55 per cent of the population adopts agriculture as main occupation and its share to GDP is almost 17 per cent. Agriculture is a vital sector for food security, economic growth, and rural development. However, it faces challenges such as limited access to information, inadequate infrastructure, and inefficient practices. Information and Communication Technologies (ICTs) offer innovative solutions to address these challenges and transform agriculture into a modern, knowledge-driven industry. This paper explores the role of ICTs in revolutionizing agriculture and their impact on precision farming, supply chain management, market access, and knowledge dissemination. Hence, ICT in agriculture has become a growing field of research and application related to e-agriculture. Information and communication are always mandatory in agriculture.

Body:

Precision Farming:

ICTs have enabled precision farming techniques, utilizing sensors, drones, and satellite imagery to collect data on soil moisture, nutrient levels, and crop health. This data is analyzed using advanced algorithms, enabling farmers to make informed decisions regarding irrigation, fertilization, and pest management. Precision farming enhances resource efficiency, reduces input costs, and minimizes environmental impacts.

Supply Chain Management:

ICTs have improved supply chain management in agriculture by enabling real-time tracking and monitoring of produce from farm to market. Mobile applications and online platforms facilitate farmer-buyer connectivity, price negotiation, and streamlined transportation logistics. This reduces post-harvest losses, ensures fair market prices, and eliminates intermediaries, increasing farmers' profitability.

Market Access:

ICTs provide farmers with access to market information, weather forecasts, and agricultural best practices. Mobile applications and web-based platforms deliver timely information on market demand, prices, and trends, enabling farmers to make informed decisions about crop selection and production planning. This empowers farmers to respond to market dynamics and increase their competitiveness.

Knowledge Dissemination:

ICTs play a crucial role in disseminating agricultural knowledge and expertise. Online platforms, mobile apps, and e-learning tools provide farmers with training materials, advisory services, and expert consultations. Digital extension services enable farmers to acquire new skills, adopt innovative techniques, and improve agricultural practices. ICTs also facilitate knowledge sharing and collaboration among farmers, researchers, and extension agents, fostering a vibrant agricultural community.

Information and Communicational Technology (IT) has huge roles to perform for agricultural development its start from decision support system to the trading of crops.

iKisan

iKisan is a web portal for transfer information to the farmers about wide-ranging issues related to agriculture such as crop cultivation, weather forecast, agricultural inputs availability and quality, agriculture related financing institutions, soil quality and market updates.

Kisan Call Centers (KCCs)

KCCs were launch on January 21, 2004 by the Department of Agricultural and Co-operation with the main aim of endowing extension services to the farming community in the regional languages. The agricultural experts also visit the farm in person to get an idea about critical agricultural problems to resolve them.

Conclusion:

ICTs have transformed agriculture by offering unprecedented opportunities for sustainable and efficient farming practices. Precision farming, supply chain management, market access, and knowledge dissemination are key areas where ICTs have made significant contributions. By leveraging ICTs, farmers can enhance productivity, reduce costs, mitigate risks, and contribute to the overall development of the agricultural sector. However, challenges such as limited connectivity, affordability, and digital literacy need to be addressed to ensure equitable access to ICTs in rural areas. It is essential of hour to obtain apposite information through ICTs and to expand advanced ICTs in agriculture.

Recommendations:

* Improve connectivity and infrastructure in rural areas to ensure reliable access to ICTs.
* Provide training and capacity-building programs to enhance digital literacy among farmers.
* Develop user-friendly and localized ICT tools and applications to cater to diverse farming contexts.
* Collaborate with private sector partners and government agencies to promote ICT adoption in agriculture.
* Conduct research and development to explore emerging technologies and their applicability in agriculture.

References:

Ali, S., Jabeen, U. A., Nikhitha, M., & India, Z. A. M. B. I. A. (2016). Impact of ICT on agricultural productivity. *European Journal of Business, Economics, and Accountancy*, *4*(5), 82-92.

Saidu, A., Clarkson, A. M., Adamu, S. H., Mohammed, M., & Jibo, I. (2017). Application of ICT in agriculture: Opportunities and challenges in developing countries. *International Journal of Computer Science and Mathematical Theory*, *3*(1), 8-18.

Hussain, S., Amin, A., Mubeen, M., Khaliq, T., Shahid, M., Hammad, H. M., ... & Nasim, W. (2022). Climate smart agriculture (CSA) technologies. *Building Climate Resilience in Agriculture: Theory, Practice and Future Perspective*, 319-338.