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PROMISING A REVOLUTIONIZED AGRI-FUTURE: E-AGRICULTURE

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Abstract: *The wave of ICT sweeping across the world has undertaken the most vital sector of developing economy of India, agriculture to e-agriculture. The Indian agriculture is facing many challenges in-spite of it being a key economic sector that contributes the most to employment, export and GDP necessitating the revolution of e-agriculture. The ways in which it could be harnessed, its need and advantages are dealt in this article. Some of the e-agriculture initiatives has also been focused along with the challenges and future prospects of e-agriculture in India.*
Keywords: *e-agriculture, ICT, information, communication*

Introduction: After e-commerce, e-banking, e-governance and not to forget e-voting now the wave of ICT sweeping across the world has undertaken the most vital sector of developing economy of India, agriculture to e-agriculture. e-agriculture is an emerging field within agricultural informatics, agricultural development and agricultural business. It refers to agricultural information and services delivered or enhanced through internet and related technologies (FAO, 2010). Thus, e-agriculture involves conceptualization, design, development, evaluation and application of innovative ways to utilize existing or emerging information and communication technologies (FAO, 2010).

e-agriculture came to existence from the World Summit on Information Society in 2003 & 2005. Bringing all e- agriculture stakeholders together in 'first workshop on e-agriculture' by FAO in 2006, e-agricultural community was formed including: Consultative Group on International Agricultural Research (CGIAR); Technical Centre for Agriculture and Rural Development (CTA); FAO; Global Alliance for Information and Communication Technologies and Development (GAID); Global Forum on Agricultural Research (GFAR); Global Knowledge Partnership (GKP); Gesellschaft fur Technische Zusammenarbeit (now called Deutsche Gesellschaftfür Internationale Zusammenarbeit, GIZ); International Association of Agricultural Information Specialists (IAALD); Inter-American Institute for Cooperation on Agriculture (IICA); International Fund for Agricultural Development (IFAD); International Centre for Communication for Development (IICD); United States National Agricultural Library (NAL); United Nations Department of Economic and Social Affairs (UNDESA) and the World Bank. ICT use in e-agriculture include mobile phones, geographic information system, radio, websites, web-logs, e-mail based information services, smart cards, CD-ROM, imaging and acoustic technologies, digital personal assistance (PDAs) etc.

Materials & Methods: The paper is basically based upon the review of secondary sources. The paper deal with the challenges which the agriculture sector is facing in India and why there is a need of e-agriculture in India. The benefits of e-agriculture for India and the ways in which e-agriculture can be harnessed is explained by citing some e-initiatives in India.

Result & Discussion: In this era of revolution in Information and Communication, web based platform and digital media convergence is playing its role in firming the status of agriculture and farmers as well. E-agriculture is of particular importance in India given agriculture is a key economic sector that contribute the most to employment, export and GDP [1]. Due to the very factor Indian Govt. also is working towards it through its ambitious programme of 'Digital India'.

Challenges to "Agriculture Sector" in India:

1. poor infrastructure and support facilities,
2. lacking institutional capacity for delivering farmers specific services,
3. Lack of awareness regarding suitable agricultural methods among the farmers,
4. Agricultural content development and its up gradations,
5. Lack of "Common Platforms" for the farmers in India,
6. Absence of an "Agricultural Think-Tank" in India,
7. Insufficient use of ICT for agricultural purposes, etc.

Need of e-agriculture in India:

1. Empowering farmers with relevant and timely information about different crop variety.
2. To reduce farming risks information on weather, production and cultivation techniques, seeds and fertilizers, plant nutrients and water usage.
3. To reduce knowledge gaps and increase knowledge sharing for increasing productivity and boosting growth in rural areas. Funds and liability coverage through agri-finance and agri-insurance.
4. Assistance from universities on new techniques used in increase production yield.
5. Market infrastructure like warehouses and cold chain management. Since information technology solutions to facilitate the collection of agricultural information. A multimedia multipurpose community telecentre in the village to enhance access to educational weather and health information (through internet, media, T.V.) and also facilitate communication between the village community and the rest of the world.

Merits of e- agriculture in India: ICT for the improvement and strengthening of agriculture sector in India include timely information on weather forecasts and calamities, better and spontaneous agriculture practices, better marketing exposure and pricing, reduction of agricultural risk and enhanced income, better awareness and information, improved networking and communication, facility of online trading and e-commerce, better representation at various forums, authorities and platform, etc [2]. Countries that have embraced e-agriculture have had their economies improve and food security promoted. For instance, a study conducted [2] found that India's agricultural sector economy grew by 3 percent after the government encouraged farmers to embrace e-agriculture.

Ways of Harnessing e-agricultural Benefits

1. Agriculture produce loss/wastage can be minimized resulting from lack of proper storage and marketing knowledge.
2. Information regarding high yielding varieties and their sources can be shared.
3. Information on right planting time, spacing, use of herbicides, pesticides and fertilizers and other tips that will improve yield can be shared on right time to right people.
4. Efficient market information for profit maximization can be given to farmers.
5. Recent trend of climate smart agriculture where e-agriculture finds its prominent use, they need to know the best areas to plant to prevent their crops from been washed away by flood.
6. It can also be harnessed for creating employment opportunities and promoting agrepreneurs by becoming the link between the farmers and the information. Stated that "youth unemployment rate can be reduced 14.2 per cent by e-agriculture if properly utilized" [3].

Advancement in e-agriculture in India: Success of an extension approach depends on how it enhances the information flow along the agricultural value chain- sustainably and effectively determined by 4 factors: type of information provided, how to and to whom information is provided, strength of feedback in each link and capacity of approach to provide relevant information [4]. The main objective is to provide an interface to farmers and consumers and to facilitate linking up of agriculture produce marketing cooperatives. ITCs, E_choupal, Eid, Parrysagriline, gyandoot project, Information village project of M.S. Swaminathan research foundation (MSSRF), I-Kisan project of Nagarjun group of companies, Kisan Call centre, Bhoomi Project., Village knowledge center etc. are the recent developments in e-agriculture in India [5]. Some other may be counted as digital green, digital empowerment foundation, crop-in, agri-mitra, apple project etc. [6]

Selected e- Agriculture Initiatives in India:

1. e-Sagu: This project has an innovative approach through use of mobile phones, to capture the data. This data is then transferred to a compact disc and mailed to the local center for analysis. Agriculture experts at the center are able to provide advice to farmers through SMS. Farmers have to pay a subscription for this

service, which includes advisory services for cotton, ground nuts, chilies and fish farming.

2. Aqua: an online multi lingual, multimedia question and answer based tool for disseminating agricultural information. Allow users to interact with subject matter experts and peers in an inexpensive method.

3. e-Choupal: The e-Choupal model has required that ITC make significant investments to create and maintain its own IT network in rural India. The farmers can use the computer to access daily closing prices on local mandis, as well as to track global price trends or find information about new farming techniques, to order seed, fertilizer and other products such as consumer goods from ITC or its partners, at prices lower than those available from village traders.

4. Amul Dairy Portal: Aimed to help dairy farmers with timely messages, information on proper care for milk cattle and enhance the production of quality milk. It also aimed to assist the dairy unions in effectively scheduling and organizing the veterinary, artificial insemination, cattle feed and other related services.

5. Agropedia: A very resourceful tool for knowledge sharing and information dissemination in agriculture.

6. Reuters Market Light (RML): Mobile phones are used for Local weather forecasts; crop prices and agricultural news are sent via SMS to farmers in their local language.

Conclusion: Considering the digital divide in many areas of India, and the small-scale nature of many of these projects, ICT still has a far way to go before resource poor farmers can trustfully and confidently access and use the technologies and information provided by the technology. It requires proper training of the farmers on internet surfing, blending the traditional skills with modern science and technology so that the objectives of 'Digital India' rather than digital divide can be brought to real grounds.

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