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Adoption of Information and Communication Technology (ICT) For Development of Indian Agriculture

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Abstract: ***In India, Agriculture is taken into account to be a primary occupation for a most section of population. We tend to aim to specialize in key factors discovered for effective utilization of knowledge Communication Technology for agricultural intensify, a minimum of on the surface, with adjunct of proof herein. E-Agriculture could be a rising field specializing in the development of rural and agricultural development through advanced data and communication processes. Some excising problems mentioned with agriculture and rural development. The event of agriculture development is below from the past few years thanks to lack of Agriculture data and environmental changes. The aim of this paper is to achieve farmers for his or her awareness, usage and perception in e-Agriculture. E-Agriculture could be a platform for supporting selling of agricultural product.***
Keywords- E-Agriculture, ICT, Agricultural Products, E-commerce.

I. INTRODUCTION

E-Agriculture" is associate degree rising field within the intersection of agricultural scientific discipline, agricultural development and entrepreneurship, relating agricultural services, technology dissemination, and data delivered or increased through the web and connected technologies. a lot of specifically, it includes the conceptualization, plan, improvement, investigation and use of latest (innovative) ways in which to use existing or rising info and communication technologies (ICTs).E-Agriculture goes on the far side technology, to push the combination of technology with transmission, data and culture, with the aim of up communication and learning processes between varied actors in agriculture regionally, regionally and worldwide. Facilitation, support of standards and norms, technical support, capability building, education, and extension square measure all key elements to e-Agriculture. There are a measure many kinds of activity associated with e-agriculture applications that area measure well known round the world these days. The delivery of agricultural info and data services (i.e. market costs, extension services, etc. mistreatment the web and connected technologies falls beneath the definition of e-Agriculture**.** a lot of advanced applications of e-agriculture in farming exist within the use of refined ICTs like satellite systems, Global Positioning Systems (GPS), advanced computers and electronic systems to enhance the amount and quality of production.

In India agricultural may be a major occupation in many parts of populated area. Most rural population depends upon agriculture as their vital occupation. Techno legal ICT and cyber law specialist of India and also the managing member of Association for people of India (AFPOI), the agriculture development characteristics square measure analyzed keeping in mind the appearance of E-agriculture in India.

A. Current scenario of agriculture sector

The activity structure of India is dominated by the "agricultural sector" and therefore the "manufacturing sector" is insolent so much behind during this context. This shows that India is preponderantly associate degree agricultural economy and therefore it needs most security and improvements of agricultural assets.

India is facing sure "Agricultural Challenges" that has to be resolved as presently as doable. The most important is as followings.

1) Insufficient agriculture the physical and organization facilities needed for the operation of society.
2) Deficient rather than to engender prestige than immediate sale capacity to apprise farmers categorical accommodations.
3) Lack of awareness relating to appropriate agricultural strategies among the farmers.

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4) Agricultural substance improvement and its up degrees.
5) Ownership problems with the general public and government generated information.
6) Inadequate utilization of Public-Private Partnerships in India.

II. E-AGRICULTURE IN BRIEF

E-Agriculture Community is formed from individual stakeholders like data and communication specialists, researchers, farmers, students, policy manufacturers, business individuals, development practitioners, and others. a lot of specifically, e-Agriculture involves the conceptualization, design, development, analysis and application of innovative
Ways to use data and communication technologies (ICT) within the rural domain, with a primary specialize in agriculture.
E-agriculture is the web platform of this international initiative aimed toward promoting property agricultural development and food security by up the utilization of data, communication, and associated technologies within the sector. In brief e-Agriculture can connect all involved persons ranging from farmers to researchers along. Farmers will get the specified data at any instant of your time from any a part of world and that they also can get the assistance from specialists viewing their downside in real time by while not moving anywhere [1].E-agriculture could be a rising field for enhancing existing agriculture and food security through increased processes for data access and switch exploitation data and communication technologies. The planet Summit on the data Society (WSIS) set up of Action contains e-Agriculture as a locality of performs of data and communication technologies (ICTs).

A. Goal of the platform

E-agriculture could be a comparatively recent term within the field of agriculture and rural development practices. Associate degree rising field specializing in the sweetening of agricultural and rural development through improved data and communication processes. To change Community members to exchange opinions, experiences, sensible practices and resources associated with e-Agriculture, and to confirm that the information created is effectively shared and used worldwide.

B. Architecture

For rising agricultural productivity associate professional agricultural recommendation is given to the farmers each in a very timely and personalized thing. Here, during these system agricultural specialists generates the recommendation by exploitation the trendy agriculture that is very information intensive that conjointly needs timely, reliable and correct info on resource endowments and their usage patterns at the moment and future technology obtainable for his or her utilization and alternative info regarding markets, weather, insurance, subsidy, etc. The design and Architecture of the Modern system is as follows:

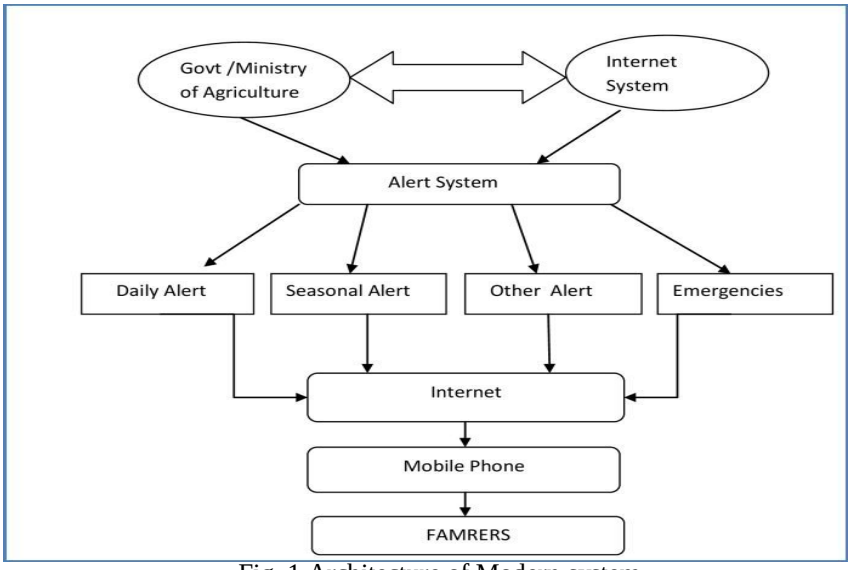


Fig. 1 Architecture of Modern system

The news releases from the government reach the farmers in time and it's additionally sub classes by the alert system.

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III. GLOBAL TRENDS IN E-AGRICULTURE

A. Technology-based Solutions

Applications of e-Agriculture in intensive agricultural systems in developed countries square measure power train towards victimization subtle technologies to boost the number and quality of production, so as to maximize profits. this can be the case in exactness agriculture within which farmers square measure harnessing pc and satellite technologies to chop prices, improve yields and shield the environment; and e-commerce (or e-marketing) within which the promoting and sale of agricultural product is conducted over electronic networks like the web and additional nets. On the opposite hand in several developing countries farmers‟ access to data is improved through grass root level initiatives of victimization ICT's likewise as distance education modalities to reinforce the content among service suppliers.

B. Precision Agriculture

In exactness agriculture or site-specific farming, farmers area unit exploitation ICTs and different technologies to get additional precise info concerning agricultural resources which permit them to spot, analyze, and manage the abstraction and temporal variability of soil and plants for optimum profitableness, property, and protection of the atmosphere [3].

Precision agriculture is delineated as: “A system to manage farm resources higher. Exactness farming is AN info technology based mostly management system currently attainable thanks to many technologies presently accessible to agriculture. These embrace international positioning systems, geographic info systems, yield observance devices, soil, plant and blighter sensors, remote sensing, and variable rate technologies for application of inputs."[4] .Precision agriculture is a complicated e-agriculture application.

It makes use of 5 major parts of technology:

1) Geographical info Systems (GIS) for analysis and management of abstraction knowledge and mapping;
2) Remote Sensing (RS) to spot and
3) Global Positioning Systems (GPS) to find and outline abstraction options or activities that contributes to the standard of site-specific practices;
4) Variable Rate Technology (VRT) permitting targeted, site-specific input applications;
5) Yield observance for recording crop productivity as historical information for crop management [5].

C. E-Commerce in Agriculture

Improved production and high yields lead to the requirement to appear for profitable markets on the far side native communities, and electronic markets area unit providing a chance to farmers to plug and sell their turn out to consumers at the worldwide level. Electronic commerce (ecommerce) merely outlined because the general exchange of products and services via the web, is already having a major impact on agriculture. farms had already bought or oversubscribed agricultural product on the Internet[6] and Emma Goldman Sachs had calculable that 12-tone system of all agricultural sales within the U.S. would be conducted over the web in 2004, compared to solely 4 wheel drive in 1999[7]. Further, a study conducted by Rockwood analysis on web use by industrial farmers within the United States found that farmers were primarily victimization the web to access data on goods costs, weather, farm chemicals, and machinery. The study conjointly showed that farmers were migrating quickly toward Web-based transactions like buying seed, crop chemicals, and farm instrumentation on the Internet [8].

IV. ROLE OF ICT IN E –AGRICULTURE

ICT is AN umbrella that has any communication device or application, encompassing: radio, television, mobile and stuck phones, laptop and network hardware and computer code, satellite systems then on, (as well because the numerous services and applications related to them, like videoconferencing, distance learning, etc.) necessary for the delivery of knowledge within the kind of audio, data, video, image, etc. from purpose A to purpose B. ICT consists of all technical suggests that wont to handle info and aid communication. Many reports underscore simply however important and extraordinary ICT productivity gains aren't just for people and businesses, except for a nation.

A new conception regarding Agricultural information processing that has arisen following the speedy development in info and communication technologies (ICTs) and of the web. Remarked as e-agriculture, agricultural information processing is a rising field which mixes the advances in agricultural information processing, agricultural development and entrepreneurship to supply higher agricultural services, increased technology dissemination, and knowledge delivery through the advances in ICT and therefore the

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net. The dissemination of knowledge to farmers has become progressively integrated into ICTs. Rural telecentres offer info on education, agricultural and health problems and equip rural voters with skills on a way to use computers and supply basic acquirement. Additionally Radio and television programmers feature agricultural info. Several of the organizations like government, private, cooperatives, and public have additionally tried to facilitate technology transfer within the agricultural sector. Info and Communication Technologies (ICTs) are crucial in facilitating communication and access to info for agricultural and rural development. Info and communication technologies are creating tremendous impact on the agricultural economy because of its wide application and attractiveness. It is going to appear inexplicable that electronic equipment lets related to developed country markets and capital intensive ways of production, has any relevancy for country like Republic of India wherever several ample individuals lack in basic desires. Even so, there are several efforts in Republic of India and alternative developing countries to demonstrate the concrete edges of ICT for rural population and to hold out constant in a very manner that produces economic sense [10].

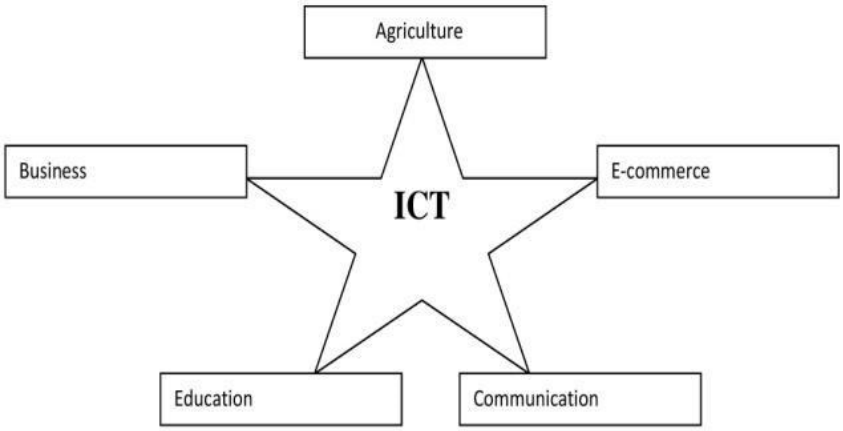


Fig.2 Application of ICT

A. Advantages of ICT in E-agriculture

1) It will initiate new agricultural and rural business like e-commerce, realty business for satellite offices, rural business, and virtual corporation of small-scale farms.

2) It will support political and analysis on optimum farm production, disaster management, agro-environmental resource management etc., exploitation tools like geographic Information systems (GIS).

3) It will improve farm management and farming technologies by economical farm management, risk management, effective data or data transfer etc., realizing competitive and property farming with safe product. As an example, farmer has got to create essential choices like what to plant? Once to plant? A way to manage pests? Whereas considering off-farm factors like environmental impacts, market access, and trade standards. IT-based call web will certainly facilitate their choices.

4) It will give systems and tools to secure food traceability and dependableness that has been a rising issue regarding farm product since serious contamination like chicken contagious disease was detected.

5) It will facilitate rural activities and supply softer and safe rural life with equivalent services to those within the urban areas, like provision of distance education, telemedicine, remote public services, remote diversion etc.

6) Empowerment of Stakeholders (Government officers, Research, Education & Extension Scientists, farmers and different service suppliers like Community data centers.

7) Development of information Management, call Support and consolatory Systems to strengthen Extension services and additionally used for Farmers Redressal system.

8) Efficient management (Development, Conservation, allocation and utilization) of resources.

9) Improved productivity and profit of farmers through higher consultatory systems.

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V. FUTURE SCOPE

A. E-agriculture is incredibly useful for the young farmer and supply them helpful information relating to the plantations that they need fully grown.

B. E-agriculture theme mistreatment the information mining technique particularly birch clump has been used for clump the massive datasets of farmers details .The present work on E-agriculture conveys the data relating to agricultural details to farmers in SMS via SMS entrance. The small print like daily alert, seasonal alert and alternative further details is sent to farmers. The daily alert is sent to all or any farmers within the information. Seasonal alert is sent to farmers just for designated farmers supported clump result. Finally the opposite or further detail that is declared by agriculture is sent to all or any farmers. Experimental result shows higher result once compare with the present work

C. This paper has examined efforts taken by major developed countries so as to sketch the wide canvas of ICT for agricultural developments. This can be then thought within the lines for the potential good thing about Indian agricultural developments specially and rural developments generally.

D. Majority of farmers within the state or country area unit aware that mobile phones are accustomed conduct businesses and receive info. Movable prices ought to be down to alter majority of farmers for having access to the present info concerning business enterprise inside the state or country.

E. The government ought to additionally conduct sensitization to form awareness for the farmers on however best they will use info technologies to conduct business enterprise.

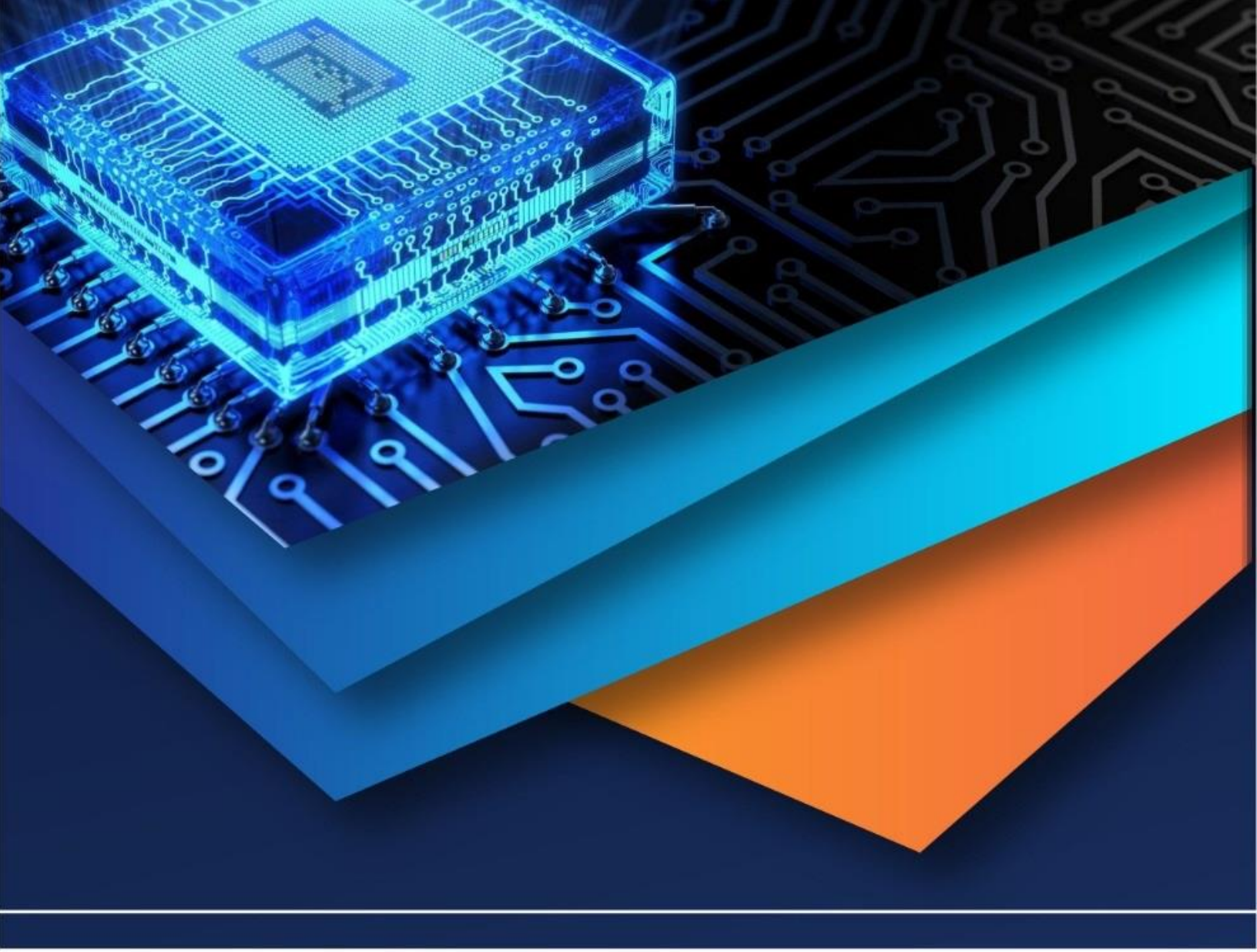
VI. CONCLUSION

The present work on E-agriculture conveys the knowledge relating to agricultural details to farmers in SMS via SMS entrance way and herewith proposes to change over E-agriculture. The main points like daily alert, seasonal alert and alternative extra details will be sent to farmers. The daily alert will be sent to any or all farmers within the info. Seasonal alert will be sent to farmers just for elect farmers supported cluster result. Finally the opposite or extra detail that is declared by agriculture will be sent to any or all farmers. Experimental result shows higher result once compare with the present work. This paper conjointly talks regarding professionals and cons of E-agriculture.

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