e-ISJN: A4372-3114
p-ISJN: A4372-3115

ISSN: 2321-7782 (Online)
ISSN: 2347-1778 (Print)
Impact Factor: 7.529

Volume 10, Issue 1, January 2022

International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: www.ijarcsms.com

Special Issue: National Conference on "Self Reliant India (Atmanirbhar Bharat) Opportunities & Challenges"
Organised by: Department of Commerce in association with IQAC of Sheth T.J.Education Society's, Sheth N.K.T.T. College of Commerce and Sheth J.T.T College of Arts, (Reaccredited by NAAC B+ (2.62), 3rd Cycle, ISO Certified: 9001:2015).
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The Role of IT in Agricultural Sector in India

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Abstract: ***Agriculture is considered as main backbone of Indian economy. As Information Technology is playing a pioneer role in every field, that's why the main purpose of this paper is to introduce the modern technology adoption its importance, usage and role in improvement of farmers in India. In the last century, the basic agriculture technology like machines has changed a life of various stakeholders of agricultural field like farmers, merchants, consumers etc. Though the modern technology, farmers and harvesters has started using various IT Technologies. It is observed and experienced that approximate 90 percentage of farmers are cultivating vegetables, Grains, Fruits, and Various Cereals etc. and brought it to the market for selling purpose. Unfortunately the real scenario is merchants are act as intermediate between farmers and consumers, it is observed merchants are earning more revenue than farmers. However, the modern technology is changing the way that humans operate the machines, GPS locators, use of IOT, as computer monitoring systems and self-steer programs allow the most advanced tractors and implements to be more precise and less wasteful in the use of fuel, fertilizer or seed. In future, there may be mass production of driverless tractors and other agriculture machinery which use electronic sensors and GPS maps. This paper has more focus to come up with the various solutions and use IT applications to change life of farmers, to gain more supernormal profit, to construct direct link between farmers and consumers for trading.***

Keyword: Agribusiness, Information Technology, IOT, GPS, etc.

I. INTRODUCTION

The challenges before Indian Agriculture are immense. This sector needs to grow at a faster rate than in the past to allow for higher per capita income and consumption. It is an accepted fact that the sound agricultural development is essential for the overall economic progress. About two thirds of workforce directly or indirectly dependent on agriculture. This sector generates about 28 percent of its GDP and over 15 percent of exports. Rising consumer prosperity and the search by farmers for higher incomes will simultaneously drive crop diversification. Export opportunities for agricultural products are also expected to continue to grow, provided India could meet the stability, quality and presentation standards demanded by foreign trade and consumers and maintain its comparative advantage as a relatively low cost producer. Given its range of agro-ecological setting and producers, Indian Agriculture is faced with a great diversity of needs, opportunities and prospects. The well-endowed irrigated areas which account for 37 percent of the country's cultivated land currently contribute about 55 percent of agricultural production, whereas, rainfed agriculture which covers 63 percent accounts for only 45 percent of agricultural production. In

these less favorable areas, yields are not only low but also highly unstable and technology transfer gaps are much wider as compared to those in irrigated areas.

If it is to respond successfully to these challenges, greater attention will have to be paid to information-based technologies. Strengthened means of dissemination will be needed to transmit this information to farmers. Both technology generation and transfer will have to focus more strongly than ever before on the themes of optimization in the management of their available resources by producers, sustainability, coping with diversity by adapting technology more specifically to agro-ecological or social circumstances and raising the economic efficiency of agriculture. To make information transfer more effective, greater use will need to be made of modern information technology and communication among researchers, extensionists and farmers. Public extension system requires a paradigm shift from top-down, blanket dissemination of technological packages, towards providing producers with the knowledge and understanding with which they solve their own location - specific problems. Continuous two-way interaction among the farmers and agricultural scientists is the most critical component of Agricultural Extension.

II. Agro Technology and Indian Economy

At present, the issues have been addressed by the Extension Systems of State Departments of Agriculture, State Agricultural Universities (SAUs), KVKs, NGOs, Private Extension Services through various extension approaches in transfer of technology. A limitation in Transfer of Technology (TOT) model continues to remain a challenge for the public and private extension systems. With the availability of telephone and Internet, web applications, it is now possible to bridge this gap to quite a large extent by using an appropriate mix of technologies.

The Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India has launched Kisan Call Centres with a view to leverage the extensive telecom infrastructure in the country to deliver extension services to the farming community. The purpose of these Call Centers is mainly to respond to issues raised by farmers instantly in the local language, on continuous basis.

III. Benefits/Pros of Farming Application of Farmer

- The modern technology has proved to be the boon to the farmers. The increased numbers of humans require more productivity from the farm and agriculture business. To feed the total number we need more production in the upcoming years. The farming app would help the farmers to grow the product to balance the ratio.
- The farmers are skeptical to adopt new technology at first, as farming is an old trade. They prefer to follow the old fashion ways, the easier methods. But in this era of technology, no one could ignore the influences and advantages of technology. With the advancement of technology, they could grow more crops or maintain farm animals more accurately. They don't need to run between the territories the farming app would do that for them with the GPS tracking facility.
- With the farming app, the farmers could instantly contact the farming experts if they needed it. They could talk via chats or use the video calling facility through the app. They could get immediate solutions to their problems. That way they could be able to resolve their issues faster and would keep the productivity unaffected.
- Farm animals get diseases sometimes. But there are several times that the farmers notice the diseased animal sometimes later. If the disease is contagious then other animals would also get affected by it. The affected animals should be moved as fast as possible. With the farming app, you could keep track of your farm animals. So, if any of them get any disease then you could identify it sooner and take majors to prevent it from spreading.

- The farming app would inform in advance if the weather is going to be a cloudy one or a radiant one. Because of the weather forecast, they could determine their line of work for the day. They also could take important preventive methods to save their products from the climate.
- In your farming app, you could show your products to your viewers. That way they would have a clear idea of the goods you are offering. Your potential customers could take their decision easily.
- With this feature, you could get every information about any incident that is happening in your farm. If there would occur anything in the farm you would get pop-up notifications on your registered device at once.
- The farming app would also help you to maintain the schedule of farming. Because of the app, there would be less chance of missing or being late for a task on your farm.
- There is direct link between farmers and consumers.
- Farmers are in position to sell their products from their farms itself.
- Farmers can utilize saved amount of transportation as a capital to cultivate their crops.

IV. The Negative Effects of Farming on Various Stockholders of Agriculture

- Use of excessive machineries in agricultural sector leads to unemployment of rural population.
- As Marginal Productivity is Zero in agricultural sectors many peoples are migrating from rural area to urban areas and it leads to urbanization.
- As there is no need of transportation various loaders and unloaders have no work for their hands.
- As the role of merchants/traders has reduced, Government receives less or no taxes from merchants/traders.
- The excessive use of chemicals by the help of machines reduces the fertility of the land.
- Lack of practical knowledge the farmers can't handle the machines properly.
- While the cost of maintenance is very high.
- Overuse of machines may lead to environmental damage.
- It is efficient but has many side effects and drawbacks.
- Furthermore, Driverless agriculture machine is a liability to access the technology.
- Improve the scouting programmes.
- The robotic machine could not change their culture, we have to set their programme manually.
- Most of the farmers are illiterates so they are unable to use the modern machines.

V. Result and Discussion

As we have discussed the role of IT in Agricultural sector we have come up with following outcomes-

- Due to advancement in technology standard of living of farmers has been improved.
- As many works done through technology, Children's from rural area has started taking education.

- Technology becomes responsible factor increase in productivity and therefor export of agricultural products is possible through ECGC (Export credit Guarantee Corporation of India.
- Farmers can devote full focus on agricultural activities.
- The traditional market is out of fashion and it replaces modern that is E-Commerce.
- The agricultural products which was kept on the street for commerce is now placed it in the malls.
- IT applications is the reason for increase in annual income of farmers.
- Various co-operative societies are started approaching directly to farmers for place orders in bulk.
- Online auctions are done for farmers products through IT applications.
- Using IOT (Internet of Things), farmers can operate their water pump sets from any place in the world.

VI. CONCLUSION

- Due to Initiatives taken by Indian Government and State Governments in the field of agricultural sector, it has observed that it is very helpful and fruitful for creating conducive environment for farmers in India.
- Farmers have become more techno savvy to use various IT applications for their agricultural activities.
- Due intervention of Information technology in agricultural sector middle mans are partially wiped out.
- It is observed that there is a substantial growth in the quantity as well as quality of agricultural product.
- As farmers are able to sell their products from their farm only, hence they do not require to bear transportation cost.
- Apart from all these things it is also important to pay attention that farmers are able to jump to allied activities such as animal husbandry, fish farm etc.
- Last but not lest we can think Information Technology act as a backbone for Agricultural sector.

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