RECENT TRENDS IN AGRITECH FOR SUSTAINABLE DEVELOPMENT OF AGRI-ENTREPRENEURS

Mr. Manas Ku. Sethi
(Lecturer in Commerce, Sanda Degree College, Dhenkanal, Odisha)
Mr. Utpal Pal
(Research Scholar, Tezpur University, Assam)
Miss Alpha Rajeswari Patra
(Trainer at DDU-GKY, Bhubaneswar, Odisha)

Abstract

Agriculture is the heart of Indian Economy and Livelihood. More than 60% of its population depends on Agriculture to earn their bread and butter. Therefore, an agriculture practice has to be treated as agri-entrepreneurship and not merely a way of life. Except if innovation is mixed with Agri-enterprise, the profitability would keep on staying low as in the conventional strategies for cultivating and agribusiness.. Some farmers are rapid adopters of technology, some of them are slow-going, and the rest are not even likely to use modern technology at all. The current government has promised to put agriculture and development of farmers in spotlight. This paper aims at describing the different technological developments of agricultural sector for the sustainable development of the agri entrepreneurs. This is a conceptual paper and gives emphasis on modern innovations in agriculture. Data are collected from the published articles, websites, and electronic documents for this study. The utility of Big Data, Artificial Intelligence, Supply Chain Management and many other technologies have been discussed in this paper.

1. INTRODUCTION:

1.1-Agri-entrepreneurship:

Agri-entrepreneurship is defined as generally, sustainable, community- orientated, directly marketed agriculture. Sustainable agriculture denotes a holistic, systems-oriented approach to farming that focuses on the interrelationships of social, economic, and environmental processes **(Baidya)**.These entrepreneurs play a significant role in the development of the economic condition and lifestyle of the people at a large.

1.2-Agri-technology:

Agritech or agriculture technology is the term referring to the use of technological innovations in agriculture to increase its yield, efficiency, and profitability. This includes using technology to achieve faster planting, modified crops that grow well in different environments, and harvesting. It can also be the use of robots, big data, AI or any methods necessary in order to solve the challenges that the agricultural industry faces. **(SIVAKUMAR, 2020).**With the help of innovative technology, the agri-entrepreneurs are producing higher output with proper utilisation of inputs.

1.3- Objectives of Agritech:

"Agri-tech is the use of technology for farming that is developed to improve efficiency and profitability. While most commonly used in horticulture and agriculture, agri-tech is also found in forestry, aquaculture and viticulture. Agri-tech aims to improve farming through information monitoring and analysis of weather, pests, soil and air temperature. Agri-tech also includes the use of automation, such as controlling heaters and irrigation and employing pest control through aerosol pheromone dispersal **(Agritechethiopia)**".The aim of agri-tech is always to improve the productivity and profitability of the farmers.

2. Objectives of the Study:

- ➢ To Study the Concept of Agri-technologies and Agri-entrepreneur.
- ➢ To study the technologies used for sustainability of Agri-entrepreneur.

3. Research Methodology:

As per the objectives, the data are collected from the different secondary sources. The sources are published articles, electronic documents, web sites etc. This paper is informative in nature. So, theoretical explanations have been done as per the set objectives.

4. Recent Trends in Agritech:

4.1. Farming as a Service:

- "Farming as a service (FaaS)" is a concept introduced to India by a company called EM3 Agri Services, which offers farming services and machinery rentals to farmers on a pay-for-use basis. Impact investment fund Aspada invested in EM3 in 2015. The concept has caught on and there is other agriculture equipment leasing and farm services start-ups in the space including Goldfarm, Ravgo, Oxen Farm Solutions, and FarMart.

- The average farm holding in India is 1.2 hectares, compared to several hundred of even thousand across Europe and the US, meaning the farmers have less income to invest in equipment like irrigation pumps, storage solutions, and so on. FaaS variabilizes the cost of farming and reduces the need for capex making it relevant to small farm sizes and affordable to small and marginal farmers **(Mathur, 2017).**

4.2 Big Data for improving farm Productivity: Big data can be used in the following purposes. (Eleks)

- ➤ **Yield Prediction:** Yield prediction sees the use of mathematical models to analyse data around yield, weather, chemicals, leaf and biomass index among others, with machine learning used to crunch the stats and power the making of decisions. According to the International Journal of Computer & Mathematical Sciences, predicting yields in this way should improve the production of crops in countries like India, where population increases represent a very real concern.

- ➤ **Risk Management:** One area that is becoming all the more influenced by connected devices and algorithms is risk management. It's now possible for farmers to leverage a web of big data with a view to evaluating the chances of events like crop failure, and even improve feed efficiency within the production of livestock.

- ➤ **Food safety and Spoilage prevention**: A critical aspect of modern-day farming - allowing instant detection of microbes and incidents of contamination. The collection of data around things like humidity, temperature and chemicals will paint a picture of health around smart agricultural businesses.

➢ **Operation/equipment Management:** Finally, we cannot underestimate the role of big data in aiding various aspects of the everyday running of an agricultural business. Equipment manufacturers like John Deere have already made a good start with their fitting of sensors around vehicles to aid their providing of data. Farmers can then log into special portals to manage their fleet and maintenance of equipment in order to reduce downtime and keep everything productive. As more companies provide solutions to aid areas of equipment management and supply chain optimisation, we can expect a much smoother delivery of crops to the market.

4.3. AI & its applications: Artificial Intelligence can be used in the following ways (SOFFAR, 2019).

- **Agricultural Robots:** Agricultural Robots are used to handle essential agricultural tasks such as harvesting crops at a higher volume & faster pace than human labourers, Robots are designed to assist in picking & packing crops while combating other challenges within the agricultural labour force, Agricultural robots can protect crops from harmful weeds that may be resistant to herbicide chemicals that are meant to eliminate them.

- **Drones:** Drone technology helps users improve their crop yield & reduce costs, Users pre-program the drone's route and once deployed the device will leverage computer vision to record images which will be used for analysis, AI & aerial technology can monitor crop health, When the drone completes its route, users can transfer a USB drive from the drone to the computer and upload the captured data to a cloud drive, It can use algorithms to integrate & analyze the captured images and data.

- **Precise Farming:** Precision farming uses Artificial intelligence to generate accurate and controlled techniques that help offer guidance & understanding about water and nutrient management, optimal harvesting and planting times as well as when the right times for crop rotation would be, These processes make farming more efficient, and can help predict ROI on specific crops based on their costs and margin within the market.

4.4 Supply Chain Management: An agriculture supply chain system comprises organizations/cooperatives that are responsible for the production and distribution of vegetable/Fruits/Cereals/Pulses or animal-based products. In general, we distinguish two main types **(Arora, 2017).**

➢ 'Agriculture food supply chains for fresh agricultural products' (such as fresh vegetables, flowers, fruit). In general, these chains may comprise growers, auctions, wholesalers, importers and exporters, retailers and speciality shops and their input and service suppliers. Basically, all of these stages leave the intrinsic characteristics of the product grown or produced untouched. The main processes are the handling, conditioned storing, packing, transportation and especially trading of these goods.

➢ 'Agriculture food supply chains for processed food products' (such as portioned meats, snacks, juices, desserts, canned food products). In these chains, agricultural products are used as raw materials for producing consumer products with higher added value. In most cases, conservation and conditioning processes extend the shelf-life of the products.

4.5 Fintech platforms for farmers:

- About one-third of the financing received by Indian farmers – approx. $60 billion – comes from non-institutional sources. Though the number of institutional funding sources is growing, there is an opportunity for fintech to improve the landscape for funders by providing them better intelligence about the farmers they're lending to and farm credit-worthiness. Most fintech start-ups in India have focused on urban areas until now so it is time to look that rural opportunity to make farmer financing more efficient and therefore more available to the industry.

- The Government of India's decision to demonetize its currency in November 2016, and the consequent impact that had on agricultural trade due to a lack of liquidity, has also highlighted the need for agricultural trade to go digital. The majority of farm income is in cash, presenting an opportunity for digitizing payments to farmers through payment gateways linked to their accounts. Given increasing penetration of smart phones among farmers, this could come in the form of apps and platforms that connect farmers digitally with rest of the trade. Apps in vernacular languages, high on simplicity and safety, is the way to scale.

4.6 Other Technologies and applications in Agri-tech include:

- Satellite photography and sensors,
- IoT-based sensor networks,
- Phase tracking,
- Weather forecasts,
- Automated irrigation,
- Light and heat control,
- Intelligent software analysis for pest and disease prediction, soil management and other involved analytical tasks etc.

5. Advantages of Agritech:

The advantages of agritech for the growth and sustainability of agri-entrepreneur are as below:

- ✓ Technology has increased agricultural productivity to the present.
- ✓ Technological development has been sustainable

- ✓ Technology is the basis for Sustainable
- ✓ Agriculture Modern agriculture is forcing increasingly to use practices that lead farmers to improve their production costs, avoid losses and ensure stable production.
- ✓ This has led to find alternatives such as the adaptation of the concept of precision agriculture in the country's crops.
- ✓ This has as a principle to determine the existing variety within the farms, plots to proceed to establish management areas where conditions are homogeneous and provide each zone what this requires.
- ✓ With this resource and inputs in the farms, plots and therefore, the profitability of the agricultural business will be improved for the entire agriculture sector for the benefit of the farmers **(Fadtech4u).**

6. Disadvantages of Agritech:

No doubt, agritech is very much helpful for the growth of agri-entrepreneur. However it has some limitations too. Some of the drawbacks is discussed as below.

- ↓ Soil erosion ,
- ↓ Excessive use of fertilizers and pesticides,
- ↓ Due to lack of education farmer are unable to run the machine properly,
- ↓ Requires huge investment,
- ↓ Leads to Unemployment.

7. Conclusion:

From the above discussion, we conclude that now-a-days it is difficult for an agri-entrepreneur to survive without use of modern technologies. These technologies can be used for various activities. Big Data and AI are digital form of agri-innovations. Whereas, Supply chain Management leads to better supply of agri-products from farmers to final consumers. Different Fintechs are also available for capital formation and performing financial activities by the farmers. Although these technologies are very useful for agriculture sector but still have some drawbacks. However, we can say that for better development and in order to sustainable development of agri-entrepreneurs, these innovations play a significant role.

References:

❖ Retrieved April 13, 2020, from Eleks: https://eleks.com/blog/practical-uses-of-big-data-in-agriculture/

❖ Retrieved April 13, 2020, from Fadtech4u: http://fadtech4u.com/what-are-the-advantages-and-disadvantages-of-technology-in-agriculture/

❖ Arora, H. (2017, Oct. 09). Retrieved from Civilsdaily: https://www.civilsdaily.com/supply-chain-management-in-indian-agriculture/

❖ Baidya, J.Retrieved April 13, 2020, from Businessmanagementideas: https://www.businessmanagementideas.com/agripreneurship-2/agripreneurship-india-business/17511

❖ SIVAKUMAR, B. (2020, Jan 23). Retrieved from Feedough: https://www.feedough.com/what-is-agritech/#What-is-Agritech?

❖ SOFFAR, H. (2019, July 09). Retrieved from Online-Sciences: https://www.online-sciences.com/robotics/applications-of-artificial-intelligence-in-agriculture-agricultural-robots-drones-plantix-app/