



A STUDY OF CHALLENGES & OPPORTUNITIES IN AGRITECH SECTOR IN INDIA

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Abstract

The words agritech is a combination of two words. Agriculture and technology. The term of agritech is used when a business makes information technology products and services that benefits agriculture sector. In India this sector has developed recently more ideas are brewing in this area to make a profitable venture. Agriculture technology is the use of technology in agricultural based on agricultural science, agronomy and agricultural engineering. Agri-tech innovations could be in the form of products, services or applications, which aim to improve. Yield, efficiency, profitability and sustainability of agricultural operations. This Research study has been carried out with a view for study of status of agritech Sector in India. The study also throws light on the challenges and opportunities in agritech sector in India.

Key words: Agri-tech sector, challenges and opportunities in agritech sector.

• Introduction

As the backbone of the Indian economy, the agriculture industry contributes to around 16.5% of India's GDP. As of 2022, the Indian agriculture market value stood at USD 580.82 billion by 2028, growing at CAGR of around 4.9% between 2023 and 2028. A majority of the credit for this goes to the governments focus on the sector and agritech platforms and their constant innovations, because of which the sector has achieved steady growth, despite there being room for improvement in many aspects.

Speaking of Agritech, it has been a game-changer to the Indian agriculture industry, which has been relatively slow in terms of technology adoption and digitization compared to other sectors. Today, Agritech has become a promising arena for investors, entrepreneurs, the agricultural community and all other stakeholders.

Agriculture Accelerator Fund was introduced by the finance minister during the union Budget 2023 to encourage the incorporation of technologically advanced modules and implementation of cost-effective solutions to reduce the fiscal challenges faced by Indian farmers. The integration of agriculture and technology, often referred to as agritech has opened new avenues for enhancing productivity, sustainability and livelihoods in rural India.



- **Objectives of the Research study**

The present research study is carried out with the Following objectives in view.

1. To introduce the concept of Agri-tech Sector.
2. To study the challenges faced by Agritech sector in India.
3. To explain the opportunities for Agritech sector in India.
4. To suggest some recommendations for development of Agritech sector in India.

- **Hypothesis of the Research study**

The hypothesis of the present research study is as under-

Agritech sector is one of the most important pillars to build a sustainable future in India however they need to overcome challenges and focus on creating innovative solutions.

- **Research Methodology**

The main focus of the present Research study is on challenges and opportunities in Agritech sector in India. The study is descriptive as well as analytical in nature and is being carried out with the help of secondary data availed from various National and International journals, Research articles, case studies, and other publications.

- **Conceptual Background**

The agritech industry is one of the most important Pillars to build a sustainable future due to its high. Demand in India and the global market. The economic survey of India 2022-23 highlighted that India's agriculture sector has grown 4.6% over the last six years with over 1300 agritech start-ups having emerged in the sector. Infrastructural development plays a key role in building a robust agritech sector. In the modern era of technology, it is not wise to neglect the technology in the agriculture sector. So, the need of the hour is to reassess the challenges and opportunities of agritech in India.

1. Challenges

While the agritech is one of the most promising business prospects in the nation, it also faces several challenges that may prevent the investors. From committing to the industry. These challenges may include -

- I. **Limited Digital Literacy:** Despite India's strides in digitalization, many farmers lack digital literacy and access to technology, making it challenging to adopt agritech solutions.
- II. **High upfront costs:** many agritech solutions require significant upfront investment, which can be a significant barrier for small scale farmers who may not have the resources to invest
- III. **Fragmented Land Holdings:** most farmers in India have small and fragmented land holdings making it difficult to adopt large-scale mechanization solutions, which are more cost-effective
- IV. **Limited Infrastructure:** Limited availability of basic infrastructure, such as electricity and internet connectivity can hamper the adoption and effectiveness of agri-tech solutions.



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- V. **Inadequate Government policies:** The government's policies and programs for promoting agritech are often inadequate, inconsistent or poorly implemented, hindering their effectiveness.
 - VI. **Lack of Collaboration:** The lack of collaboration between stakeholders. Including farmers, private sector players and the government can limit the development and adoption of effective agritech solutions.
 - VII. **Limited Market Access:** Even if Farmers adopt agritech solutions, they may face challenges accessing markets to sell their produce due to a lack of market linkages and limited market information.
 - VIII. **Issue with Regulation of Drones:** Privacy is a major concern that looms over the trajectory of this sector since are aerial vehicles. Come equipped with sophisticated sensors and cameras.
 - IX. **Forces of nature:** The agricultural yield is highly depended on the climate conditions. Unfavorable weather or a natural calamity like a flood or a drought have a huge impact on the sector.
 - X. **Skill Development:** while the technology has been growing exponential over the past 3 decades. The skill and knowledge of our farmers is yet to catch up.
 - XI. **Funding:** owing to the above mentioned challenges along with a few other factors, the major investors still are hesitant to fund the agritech industry. The unpredictable nation of the primary sector has kept investors at bay for a long time.
 - XII. **Limited adoption of technology:** The adoption of technology is still slow in the agriculture sector and it is challenging to convince farmers of the benefits of technology. Agritech startups need to create awareness and demonstrate the value of their solutions to farmers.
 - XIII. **Fragmented Agriculture Ecosystem:** The agriculture ecosystem in India is fragmented with multiple intermediaries involved in the supply chain. This makes it challenging for agritech.
 - XIV. **Resistance to change:** Traditional farming methods have been ingrained in rural Indian communities for generations. Convincing farmers to embrace technological interventions can be challenging due to scepticism about the benefits, Fear of the unknown and concerns about disrupting established practices.

2. Opportunities

Being one of the largest agricultural producers of the world, India's potential for growth in the agritech industry is exponentially high. The agricultural value chain is a multi-dimensional system that starts at the Farm inputs. Using technology to modernize or improve any part of the value chain can open up prospects for investments. Here are some opportunities for agritech sector in India.

- I. **Harnessing innovative tools:** from precision farming and data driven insights to smart irrigation systems and crop monitoring technologies empowers farmers with real-time information and guidance, enabling them to make informed decisions. By tailoring recommendations to individual needs, agritech enhances agricultural productivity while minimizing resource wastage



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- II. **Market access and financial inclusion:** Agritech platforms often provide farmers with direct access to markets and buyers. This eliminates intermediaries and ensures fair prices for their produce. Additionally some agritech solutions offer financial services, enabling farmers to secure loans, insurance and other financial products that were previously inaccessible.
 - III. **Precision agriculture and resource optimization:** precision agriculture, a key component of agritech enables farmers to optimize resource usage. Farmers can apply precise amounts of water, fertilizers and pesticides through satellite imagery, sensors and data analytics reducing waste and environmental impact.
 - IV. **Diversification of income streams:** Agritech adoption opens doors to diversifying income streams beyond traditional farming. Rural entrepreneurs can develop and market agritech solution creating employment opportunities and contributing to local economies.
 - V. **Skill development and employment:** The integration of agritech necessitates skilled professionals to develop, maintain and operate the technology. This creates a demand for training and skill development programs, offering employment prospects for rural youth and enhancing overall human capital in rural areas.
 - VI. **Huge market:** India has a vast agriculture sector and with a growing population the demand for food and agricultural products is expected to increase. This present a significant opportunity for agritech startups to provide innovative solutions to the agriculture sector.
 - VII. **Adoption of technology:** The adoption of technology is increasing in India and the agriculture sector is no exception. With the penetration of smartphones, farmers can how access information on weather, markets and crop management practices.
 - VIII. **Government support:** The Indian government is supportive of the agriculture sector and has launched several initiatives to promote sustainable agriculture practices and encourage the adoption of technology.

3. Recommendations

- I. Agritech startups need to create awareness among farmer about the benefits of technology and demonstrate the value of their solutions.
- II. Agritech sector should collaborate with the government and leverage their initiatives to promote sustainable agriculture practices and encourage the adoption of technology.
- III. Agritech startups should focus on innovating and developing solutions that address the specific challenges faced by the agriculture sector in India.
- IV. Agritech sector require significant capital to develop and scale their products. They should focus on building a strong business case and attracting investors.
- V. The government should encourage farmers to adopt modern technology in farming.
- VI. Agricultural research should focus on the needs and priorities of farmers.
- VII. Research institutions should focus on developing affordable and accessible technologies that can improve agricultural productivity.



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- VIII. Agriculture related education and training should be made available to farmers, researchers and other stakeholders.
- IX. Drone regulation is a critical issue that requires careful consideration to ensure the safety and privacy of individuals and communities.

- **Conclusion**

From the above discussion we can conclude that agritech sector in India have a huge opportunity to transform the agriculture sector and create a positive impact on the economy. However, they need. To overcome the challenges and focus on creating innovative solutions that address the specific challenges faced by the agriculture sector in India.

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