



# Impacts of Digitalization in The Agriculture Sector

Ragini Agrawal

Ph.D. Associate Professor, Department of Economic, K.R. Girls (P.G.) College,  
Mathura, Uttar Pradesh, India

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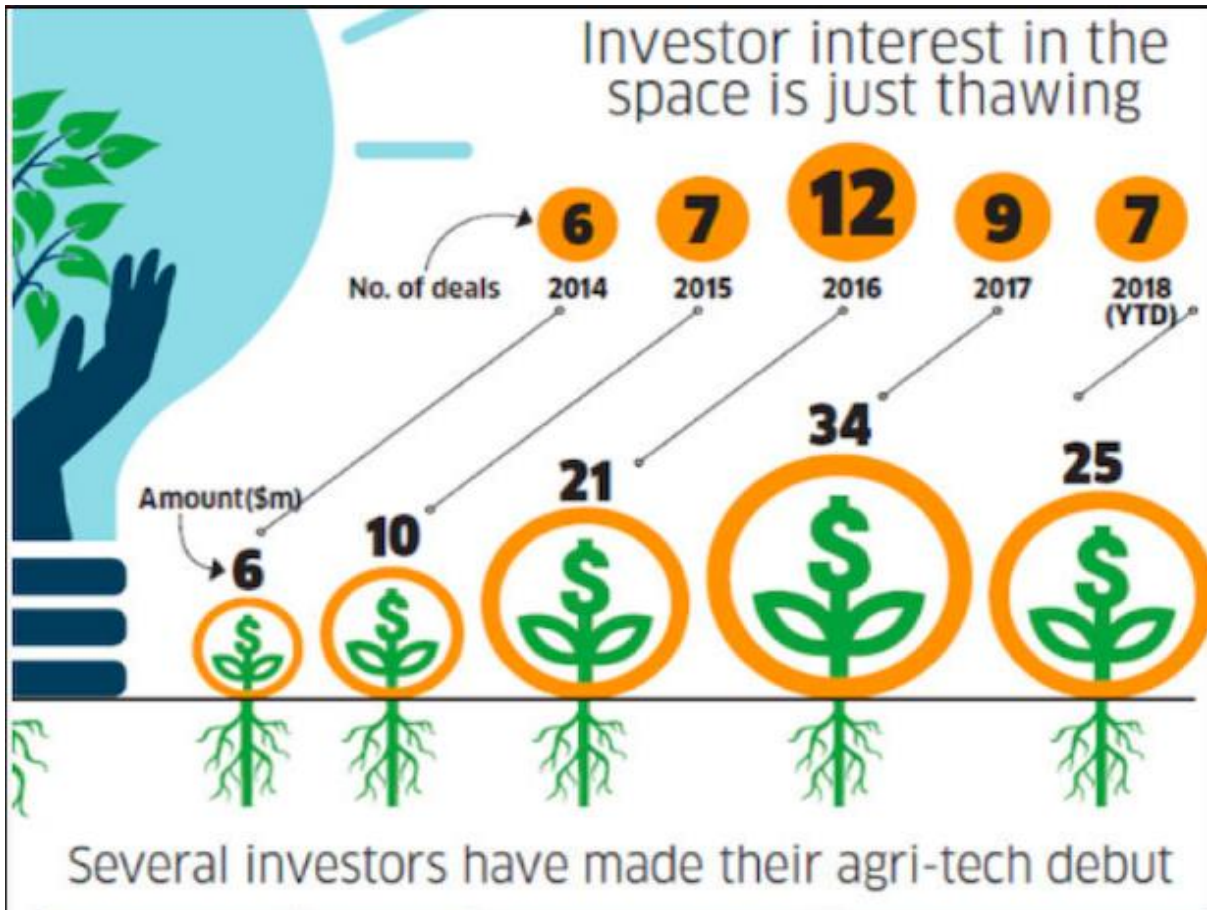
**Abstract :** Like every sector, digitalization has impacted the traditional manufacturing sector and helped the entrepreneurs find solutions to the rudimentary problems faced by everyone involved in the field. The major problems that are faced by the farmers in 21<sup>st</sup> century India are the size of farm lands, dependency on monsoon for irrigation, dependency on quality seeds, fertilizers and pesticides and subsidies, storage and financing and lastly transportation. These problems are being solved with the adaptation of digitalization and real time monitoring of raw material and produce. And All of this has been made possible with the entry of young and talented entrepreneurs who have revolutionized the space and set in flow a model where each farmer is now a part of the system and it now need not worry about the other factors and simply focus of his/her expertise, i.e growing crops to feed the population. This has resulted in higher prosperity and less wastage, and them getting a fair price for their produce.

**Keywords:** Agripreneurship, Agriculture entrepreneurship, Agri-startups, Indian Agriculture, Agriculture productivity.

Impacts of Digitalization in the Agriculture Sector Based on a layman's outlook on the commodity space it portrays that the grass is greener if we consider the Agriculture sector, which based on the recent trends has shown us a positive growth in the previous quarters. We witnessed that the exports surged considerably during the worst hit months of March – June, which could be very well attributed to the surprising surge in the food grain production.

The major causes of this considerable growth in the sector at a time when all others were declining and laying off the work-force just to stay afloat can be attributed to the following:

- Deregulation of the agriculture markets
- The much needed amendments of essential commodities act
- The government's support and assurance of a minimum support price to the farmers.
- The additional assistance provided to them in forms of various schemes and aides in the exports.

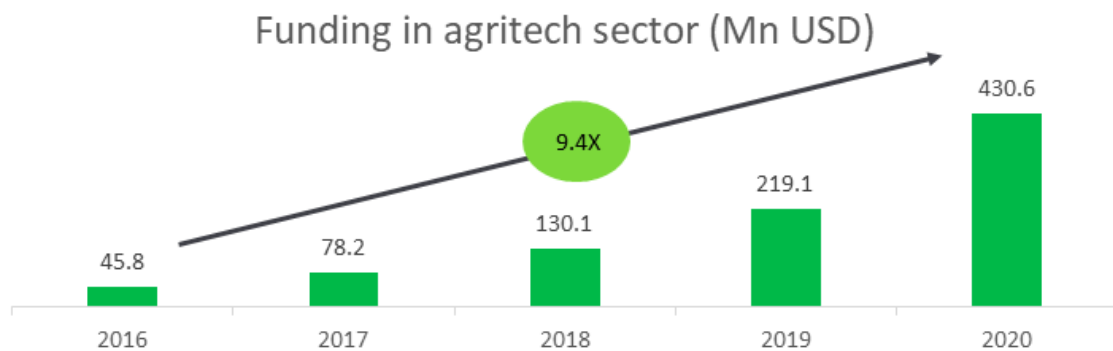


Source: Economics times

However, none of the above points comes close when we talk about the addition to the growth of this sector than the rise of “Agriprenurship” which can be defined as the Involvement of young and Dynamic entrepreneurs with Agriculture goods and its by-products being their product of focus. Their involvement and incorporation of modern technology not only brought successfully farming techniques from various parts of the world which have been perfected over time and have started yielding results. Along with this they streamlined the services like transportation with real-time monitoring and quality-testing of the produce which significantly aided the farmers and encouraged them in the dire times.

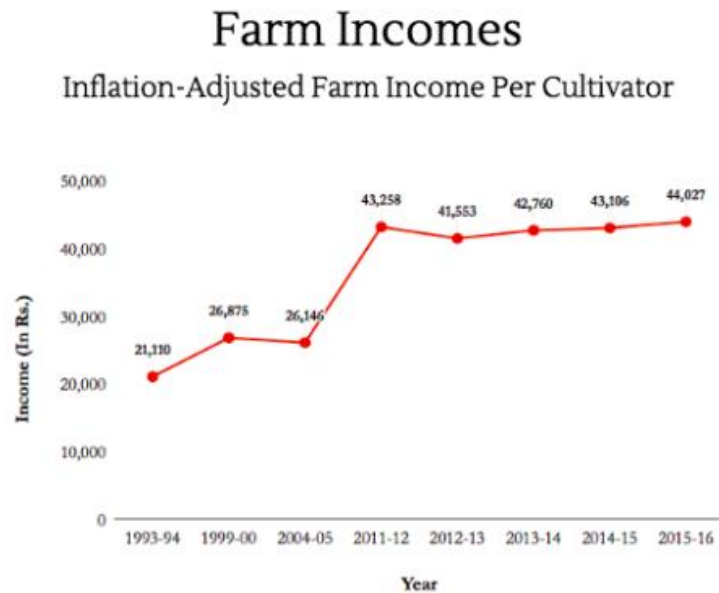


These Agri-startups saw a massive support from the governments (both state and national) in terms of relaxed norms and massive investment (more than 11 crore rupees were invested in 112 Agriculture based startups in 2021 alone, with a promise to invest an amount of upward of 37 crores in the coming years.



Source: SeedtoScale

When trying to decode what exactly is the road ahead for these agri-startups along with the kind of stimulus they require from the private as well as government institutes to make sure the Agriculture sector as a whole continue the bull run it started. Let us start by analysing the major challenges these agri-startups face and also see the workarounds which are implemented to overcome these challenges to make this a viable business option.

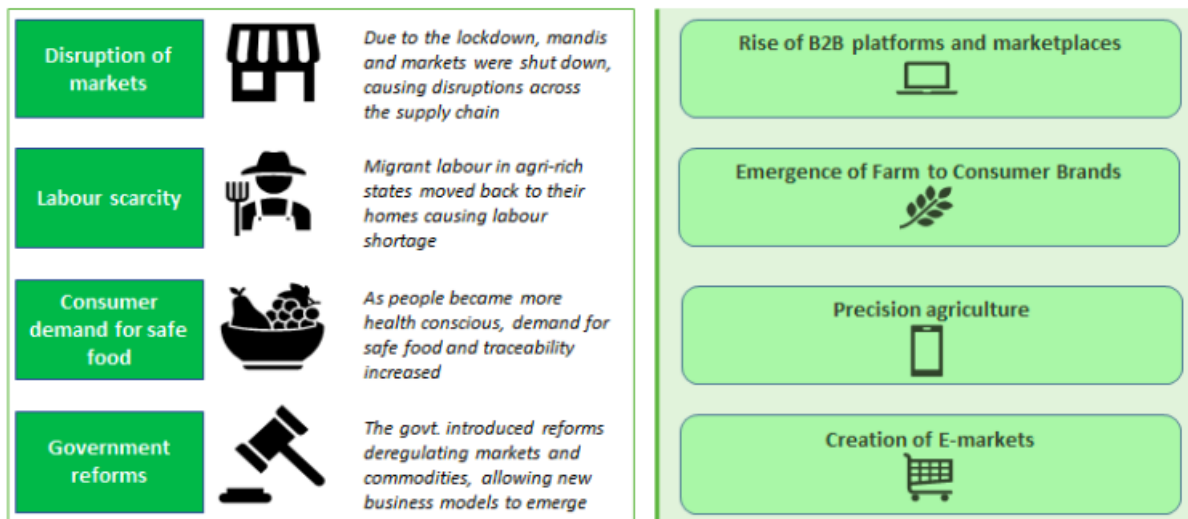


Source: NITI Aayog

#### Challenge 1: Small Farm land size

India has been an agriculture based economy. The same piece of land has been divided among all the members of the next generation and this practice has been going on for generations. Which has resulted in each farmer holding only a marginal piece of the original land. According to the data released by the government of India more than 86.2% of farmers have a land holding of less than 2 hectare in India which results in declined productivity, along with this the land is also not available as a whole, rather it is fragmented which further increase the operational and optimum use of resources.

Workaround: With the growth of Agri-startups, they replace the middle men who dealt with each farmer as a single entity and form a society of by convincing the farmers of a particular area to pool their resources and grow the product, based on their requirement and demand utilize the divided geographical farms in the most optimum way. This has not only allowed huge machines to be used even on small farms, by pooling the resources results in less wastage resulting in increased productivity.

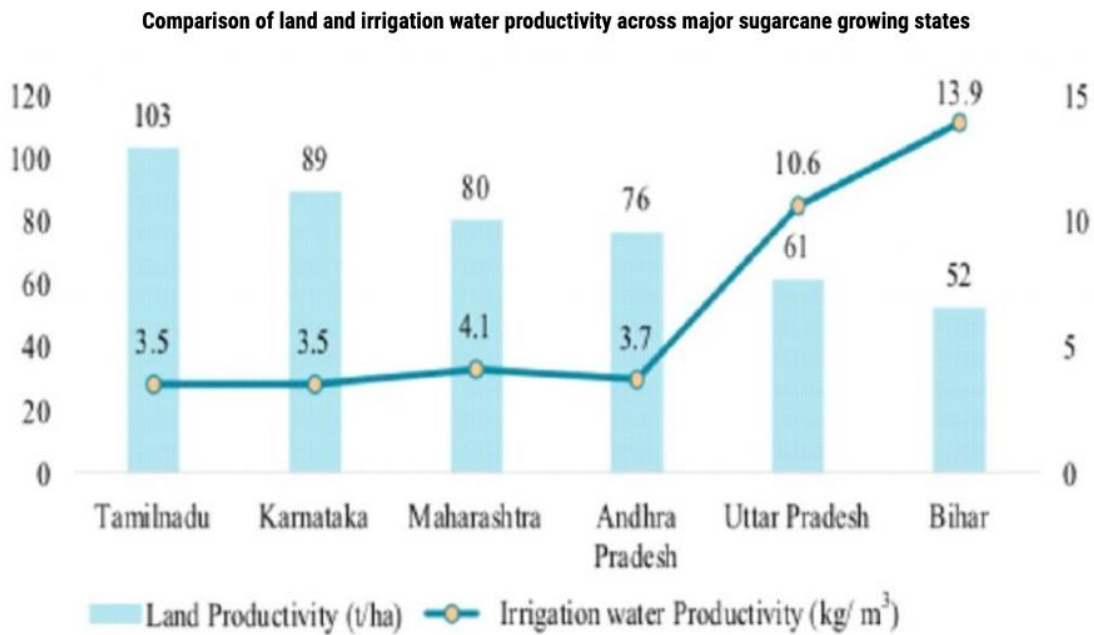


Source: SeedToScale

### Challenge 2: Dependency on Monsoon for Irrigation

While many policies have been planned and incorporated from time to time to make sure that the farmers do not have to depend solely on monsoon to irrigate their farms, but there still is a long way to go. South-west monsoon which is responsible for almost 75% of rain in India has a huge role to play on the Indian agriculture and its produce. Most Indian farmers are directly dependent on the monsoon and it plays a crucial role in the quality and quantity of produce.

Workaround: With the involvement of the tech-based startups, it's not difficult to predict the weather patterns and the kind of produce to be planted and expected. Even the supply of water can be pre-determined based on the available data from the different government and non-government sources. So relying solely on monsoon and canals is a thing of the past. Along with corporation among farmers have eased the distribution of water from a single underground source to irrigate a large area.

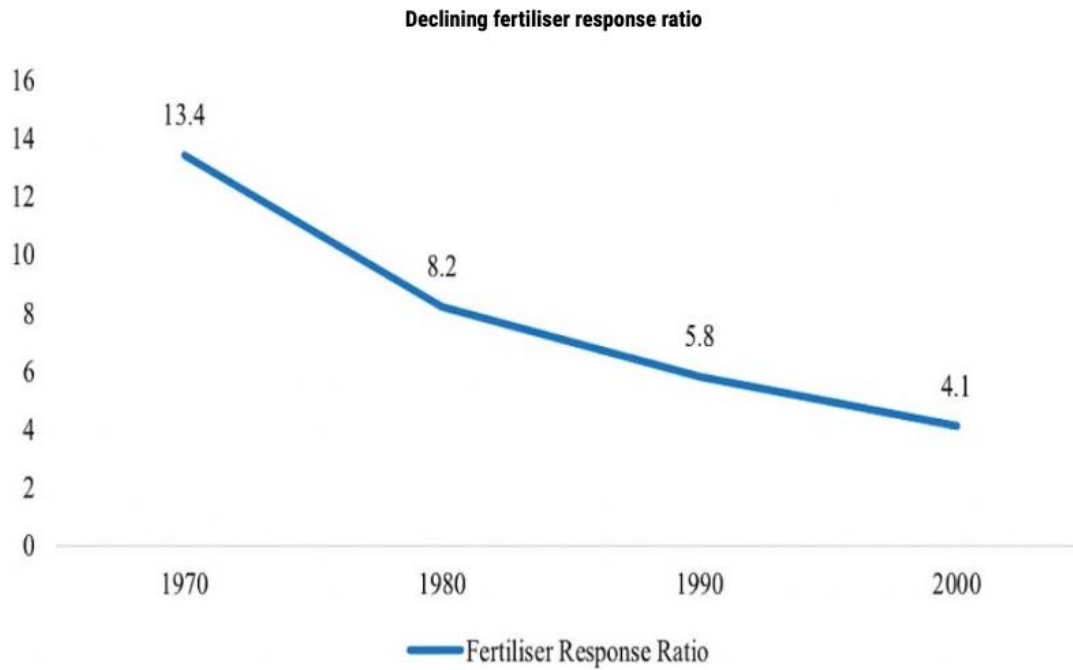


*Source: Nabard and Icrier, 2018*

### Challenge 3: Dependency on Quality seeds, fertilizers and pesticides and Subsidies

This has been a major concern in the Agriculture sector. A timely distribution and availability of good quality seeds, fertilizers, pesticides and other important agriculture equipment to farmers in the rural and report parts of the country has been a major challenge. With governments in different states plan and implement different distribution mechanisms, there has been varying levels of success and these successes have not been constant and are largely dependent on numerous factors like the party in power in state and center, or the relay of information from the governing body to the management body.

Workaround: The introduction of start-ups and other tech based industries have not only reduced the burden of the government, but have significantly reduced the dependency of farmers on these items as well. Like with the development of seeds that are naturally more resistant to attacks from pesticides, has greatly reduced the dependency on pesticides. With the involvement of private players in the domain and public private partnerships, the distribution system has seen great improvements where the availability is predicted using the various models available at their disposal and the using a well synchronised distribution system with very little to no involvement from public sector, the required equipments and materials are made available to the farmers at a local warehouse centers which are easily accessible.



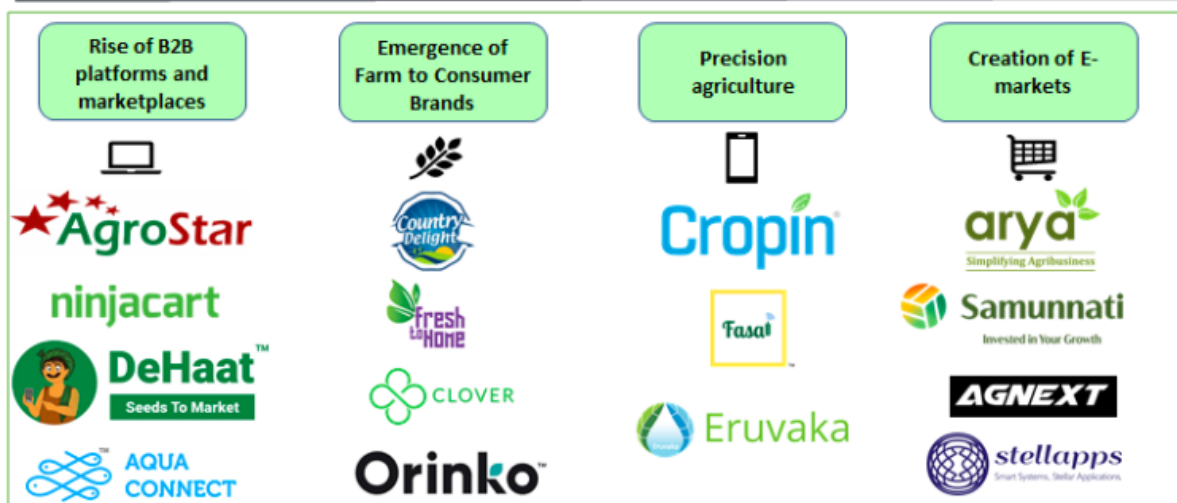
*Source: Department of Fertilisers*

#### Challenge 4: Storage and financing

It is a major part of agriculture, and even our honorary finance minister Ms Nirmala Sitaraman spoke about the need of the hour is to geotag all the agriculture warehouses in the country. And this has been the advice of numerous economists and agriculture entrepreneurs to ensure that the visibility around storage and especially in the context of warehouses and cold storages is not only made public but is also easily accessible. These transaction points are extremely important and a trend has been noticed where we witness a very sharp increase in the interest amongst individual warehouse owners who are otherwise mostly invisible increasing. They wish to be integrated with the government and private grids and improve their overall standard and services to be at par with their counterparts.

Workaround: With the involvement of big tech and startups, the issue of identifying and locating a warehouse has been greatly reduced but there is still a lot to be added as additional features to make these platforms as one stop solutions to the farmers and agri product buyers. These platforms currently have services to location your location and identify the nearest warehouses around you. And when a user sees a warehouse, they can see with a simple click the information about all services around it. However, there are still scope of improvements, like we have the services on e-commerce websites and applications whereby a farmers and vendors should be able to compare warehouses based on their requirements. There you should be able to see what the warehouse actually provides to you, it also try and bring out to you the different financing options against the produce that you store in a warehouse, because without the finance, storage is incomplete.

We have analysed how 15 of India's largest agri-tech startups responded to the Covid crisis



Source: SeedToScale

### Challenge 5: Transportation

The witness of jam packed roads around a few warehouses on the road, to inability of farmers in some remote areas to move their product has been some of the major talking points by the farmers to their local representatives and the promises to have this issue resolved were a part of election manifestos by all major parties for the past 4-5 decades. There is an imbalance in the supply and demand of the transportation facilities. Also there were no way to have contacts with the transport companies and nor with the insurance and preservation companies especially to a small scale individual farmer with little yield which mostly resulted in its hard work being decayed in front of his own eyes or he being forced to sell his produce at the mercy of middlemen.

Workaround: The transporters, preservation agencies, insurance companies all of them come together on one particular platform so when an entity like a farmer or a large group of farmers or an agriculture industry wants to store the produce can actually access all of these services on one platform, and at the same time the stored produce needs to be transported to be sold off to different parts of the world. These platform really does is bring together a marketplace which

to connect different buyers to farmers/warehouses who store their produce and create a working business model to enable smooth transactions of farm produce. With the adaptation of technology even by the remotest corner of the country, and efforts by the government in digitalization, there is a sharp increase in these transaction volumes as well these integrated offerings which are the need in today's environment and technology truly revolutionize the transportation in a country like ours where more than 50 percent of the population is still dependent on farm based industries.



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