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Will Blockchain Transform the Agri-sector?

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Blockchain technology gained extensive traction because of its vital role in the fintech sector. It has now been seen to have vast applications beyond cryptocurrencies and the agriculture sector is not an exception. Technology has drastically transformed the agriculture sector along with healthcare, real estate, banking, and so on. As per market predictions, blockchain is all set to become a game-changer in India with a whopping $176 billion of business potential by 2050.

Considering the capabilities of blockchain, the agriculture sector in India is all set to propel it to a whole new level, continuing its contribution to the $5 trillion economy. There are nearly 150 startups working on the application of blockchain technology in the agriculture sector. Even today, the Indian agriculture sector is undergoing several issues that need immediate resolution for scalability and growth of the sector. The agritech startups leveraging the potential of blockchain technology are helping the agriculture sector in numerous ways.

With India being an agrarian economy, agriculture is considered the primary source of livelihood for around 58 per cent of the countryâ??s population. It is one of the most important sectors, and yet a slow adopter of tech-driven solutions and techniques. It was the outbreak of the pandemic that devastated the food supply chain across the world and resulted in the accelerated adoption of technology.

In recent years, the agritech startups have introduced technology-based solutions that give a boost to the resilience of the sector. By embedding blockchain technology in agriculture, it has become easier to fortify farming in India through different use cases of blockchain technology.

Data generation and processing

Agritech startups are embedding IoT sensors and blockchain technologies to consolidate information on multiple steps of farming â??from evaluating the quality of seeds, to crop tracking and the journey of crops from the farm to the market. Amidst the extensive farming process, it is imperative yet complex for farmers to keep track of the farming process. With IoT-enabled smart farming systems, it becomes easier to manage the effect of temperature, pH, soil moisture, humidity and light on the crops. These devices generate data and help farmers make well-informed decisions based on data storage.

Further, to make the data more insightful, machine learning algorithms are applied to the data gathered from the sensors. This enables predictive models to drive high use cases for crop quality recommendations, crop identification, crop yield and crop demand prediction. With the captured information, farmers are also able to have a sense of control over the irrigation of fields.

The advantages

Traditionally, the method of storing data on a centralised server has several risks associated with a single point of failure. However, the usage of blockchain technology stores data across every node, which prevents centralisation of authority, making the exchange of data seamless with specific stakeholders and greatly reduces risk. This brings efficiency to the entire crop or food production value chain.

Transparency in the food supply chain

Bringing food from the farm to the table, it goes through several different players in its journey. Hence, it becomes critical to identify the source of the food in ensuring it is safe to supply and consume. Similarly, in todayâ??s scenario, it becomes challenging for food producers and retailers to confirm its origin. To bring trust and transparency to the food chain, blockchain technology can play a pivotal role in reducing food fraud.

The integration of blockchain technology eliminates the role of middlemen in the agriculture sector. It helps re-establish trust between producers and consumers which reduces unnecessary costs spent in the food chain, making it optimal and efficient.

Blockchain technology dramatically improves security that offers customers a reliable approach to tracking transactions. This brings traceability to the market by helping food companies in recall investigations for low quality or food frauds.

Confrontation with unpredictable weather conditions

When growing different types of crops, farmers have to face different weather conditions. If weather prediction and monitoring become possible, the survival rate of crops can be increased. By deploying sensors in the field, farmers can understand the cropâ??s behaviour and respond accordingly to soil temperature, air temperature, rainfall, wind speed and direction, humidity, sun exposure, wind direction and many other conditions.

By analysing weather data, farmers can make informed decisions to reduce crop damage in their fields, making the entire production process affordable and highly efficient.

Crop insurance and finance

In the entire food production process, farmers struggle due to a lack of transparency and credit histories. The poor accessibility to financial services can have an adverse impact on crop production and the performance of the agricultural value chain. As a result, producers do not maximise their yields and buyers struggle to ensure efficient supply. This leads to payment of farmers on delivery, forcing them to sell their crops at lower prices.

The use of blockchain in automating the auditing process can prove to be the key to verifying transactions directly via digital ledgers. This can make auditing cost-effective, making it possible to replace external auditors.

Whatâ??s in the future?

The applications of blockchain in the agriculture sector are growing extensively. It has begun to revolutionise the industry and is yet to disrupt it in the coming years. By enriching and structuring data in farming, agritech startups are playing a crucial role in backing the farmers with the capabilities to grow and innovate.