Modernization of farm machinery - Backbone of transformation

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BACKGROUND

The ultimate goals of any farm mechanization initiatives are aimed at implementing engineering technologies to increase the level of cultivated land, achieving labor efficiency and productivity, moving towards industrialization and strengthening the market for rural economic growth thereby improving the livelihood of farmers. History shows that one of the strategies adopted in the past by Western countries to increase agricultural production and industrialization was agriculture mechanization. More recently in the 21st century, many Asian countries including India have embraced this western thinking and implemented mechanization policies in line with their own unique industry requirements.

CURRENT AGRICULTURE INDUSTRY SCENARIO & FUTURE PROSPECTS

As per recent reports published by credible government and private sources, the Indian agriculture sector is at an inflection point. The US $ 370 billion sector is ripe for disruption and expected to undergo a significant transformation in the next decade over the backbone of modernization of farm machinery, tools and equipment, disruptive digital technologies, increased interest from the investor community, political stability and favorable changes in the regulatory and policy framework.

The Covid-19 induced lockdowns came with a huge economic cost and cascading impact on all the sections of society. While key industry sectors struggled to stay afloat amid the global pandemic, agriculture emerged as the 'only bright spot' in the economy clocking a positive growth of around 3 % and contributing about 20% to the country's Gross Value Added (GVA). Additionally, at the turn of the new decade, India's agri-exports scripted a new history by crossing the USD$ 50 Billion mark for the financial year 2021-22. In spite of the above growth, the Indian agriculture is fraught with challenges arising out of continued dominance by farmers possessing small and marginal land holdings and the dependence of approximately 55% of the nation's population on agriculture for their livelihood.

The global pandemic, ongoing Russia-Ukraine conflict, rising geopolitical tensions, extreme weather conditions on account of climate change and disruptions in global supply chains are collectively causing an unprecedented food crisis in the world. Soaring commodity prices at record-breaking levels have fueled inflation across nations exposing some parts of the world to the risk of facing severe food shortages. As per the Global Risks Report, 2022 published by the World Economic Forum, around 51 million more people are projected to live in extreme poverty and starvation compared to the pre-pandemic trend. In wake of the current global uncertainties, a post-pandemic new world order is in the formation in which India will have a very key and significant role to play.

https://doi.org/10.52151/aet2022462.1567

The remarkable strength and resilience of the Indian economy amidst the global slowdown has come to the forefront. India has the potential, capacity and the ambition to emerge as a global wheat superpower and increase its world market share in the exports of agriculture and food commodities. However, to achieve the above ambitious targets and realizing the goal of doubling farmer's income in the next few years, reforming and transforming Indian agriculture by adopting increased use of smart farm mechanization techniques coupled with technology-friendly practices across the agricultural value chain including development of agricultural land, planting, harvesting and primary processing amongst others shall play a critical role not only from an environment, sustainability, and climate change perspective but also uplifting millions of farmers from subsistence farming and poverty, transforming them to become Agripreneurs and future wealth creators.

SMART FARM MECHANIZATION & DISRUPTIVE DIGITAL TECHNOLOGIES

Research indicates that progressive farmers who have adopted smart farm mechanization techniques to streamline and automate manual processes on the backbone of data-backed services across the agriculture value chain are generating positive results. Use of disruptive AI (Artificial Intelligence), ML (Machine Learning) and big data analytics based digital technologies in farming activities such as ascertaining weather conditions, soil conditions, accuracy in climate forecasting, demand forecasting, smart crop management, inventory management, smart and controlled irrigation systems, vertical farming, sensors, satellite imagery, IOT (Internet of Things) for better tracking, control and visibility of farming assets and activities are leading to improved precision farming, reduced dependency on labour, higher crop yields with superior quality, thereby propelling the sale of agricultural produce and food commodities.

Further, the current technology, investment, policy and regulatory framework is very conducive for individual farmers, agriculture and food processing cooperatives i.e. APOs & FPOs and all key stakeholders in the industry to adopt latest farm mechanization technologies and equipment in a big way for growth and prosperity. Moreover, investments in the Indian Agri-tech have increased significantly over the past few years and this trend is expected to continue over the next few years leading to the creation of a few unicorns to say the least in the Agri-tech space which shall radically disrupt and overhaul the agriculture and food processing technologies sector.

In conclusion, I truly believe that we are at a key juncture from where the Indian agriculture industry can leapfrog from the traditional methods to a modern, smart, innovative technology oriented and mechanized way of sowing, growing, processing, harvesting and selling agriculture and food commodities leading to a self-reliant, self-sustainable, resilient and AtmaNirbhar Bharat.