

ROLE OF AGRICULTURAL DIGITAL MARKETING IN ECONOMIC DEVELOPMENT OF INDIA- AN OVERVIEW

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ABSTRACT

Agriculture remains the primary source of livelihood for a majority of the Indian population, playing a crucial role in the country's economic development. As the primary industry, agriculture contributes significantly to national income and provides employment to a large section of the population. Agricultural marketing in India offers a comprehensive overview of the agricultural landscape, including market structures, government interventions, technological advancements, and the challenges faced by the sector.

Effective marketing strategies are vital to ensure that farmers can access markets for their produce, particularly as production levels increase. However, in many rural areas, farmers struggle to find markets for their products, often due to inadequate information regarding pricing and market access. Government initiatives, such as the Minimum Support Price (MSP), play a crucial role in shaping market dynamics and supporting farmers.

The adoption of digital technology in agriculture is increasingly recognized as a key driver of economic growth. Many companies in the agricultural sector are effectively utilizing digital tools to enhance consumer value, improve supply chain efficiency, and provide farmers with better access to markets and information. Digital technology, while still emerging in some rural areas, holds great potential to address challenges such as market access and price transparency. The contribution of the agricultural sector to India's Gross Domestic Product (GDP) has been a fundamental aspect of the nation's economy, especially given its role as the primary source of livelihood for a significant portion of the population.

Despite the advancements and government support, the agricultural sector in India faces several challenges. The most pressing issues include inadequate market access in rural areas, lack of real-time information on prices, and the need to find new markets for increased production. Addressing these challenges is essential to ensure that agriculture continues to thrive as a cornerstone of the Indian economy.

Keywords: Agriculture Marketing, Gross Domestic Market, Economic growth, Digital tools, Challenges Rural Marketing

INTRODUCTION

Agriculture remains the primary source of livelihood for a majority of the Indian population, playing a crucial role in the country's Economic Development. As the primary industry, agriculture contributes significantly to national income and provides employment to a large section of the population. Agricultural marketing is a decision-making process that includes pre- and post-harvest operations, assembly, grading, storage, transportation, and distribution. It begins with a decision to produce a marketable farm product and involves all Institutional and financial aspects of market structure or system. To promote growth, employment, remunerative prices, and economic success in rural areas of the nation, the agriculture

Industry needs well organized and effective markets, ideally close to farmers. But the contribution of the agriculture sector to the overall economy varies from country to country depending upon the level of economic development. In early stages of economic development normally agriculture is the major contributor to national income and it provides employment to a majority of people. In India agriculture is our primary economic activity and about two thirds of our population is engaged in agriculture. Agriculture is the back bone of many developing economies, providing food security and providing income and livelihood to the small farming families.

Digital marketing in India is set to evolve rapidly, with technological advancements and changing consumer behaviour driving innovation in the industry. Brands that stay ahead of these trends and adapt to the dynamic landscape will be well-positioned for success.

The agriculture sector, currently valued at US\$ 370 billion, is one of the major sectors in our Indian economy. According to the Economic Survey GDP contribution by the agriculture sector recorded. Over the years, the government has taken major steps to provide the agriculture sector with benefits to farming technologies and financial institution. The recent evolution of digital technology in farming will further accelerate growth by ensuring higher crop yields and enhance sustainability by reducing water consumption and the use of chemical to the growth of crops in short duration period.

OBJECTIVES OF THE STUDY

- To study the opportunities and challenges of agricultural marketing.
- To identify the key aspects of digital sector to the agriculture marketing.
- To study the recent trends in agricultural marketing in India.
- To highlights the importance of Rural Agricultural Marketing.
- To study role played by agriculture sector in process of economic development.

LITERATURE REVIEW

Modernization of existing post-harvest processing, establishment of suitable infrastructural facilities, huge amount of countries exchequer can be saved and further helps in feeding the teeming population in the country (Sivanappan, 2000).

Market information is an important facilitating function in the agriculture marketing system. It facilitates marketing decisions, regulates the competitive market process and simplifies marketing mechanisms. Market information is a means of increasing the efficiency of marketing system and promoting improved price formation. It is crucial to the farmers to make informed decisions about what to grow, when to harvest, to which market produce should be sent and whether or not to store it. Improved information should enable traders to move produce profitably from a surplus to a deficit market and to make decisions about the viability of carrying out storage where technically possible (Amrutha, 2009).

Revolution of IT instruments like internet, social media have contributed to bring about change in consumer behaviour and this change is taking place at rapid speed. Although, behaviour of consumer is complex, increasing consumer awareness and development of modern urban life style are playing significant role to bring about change in behaviour of rural consumers. A few factors like celebrity influence, trends of online shopping, popularity of eco-friendly products cannot be ignored while studying customers' behaviour (Kumari, P., 2012).

In older days, selling of agricultural produce was very easy. It was either a direct selling or for a barter. In fact, it was not marketing but was only selling. But at present time, presence of middlemen, commission agents, latest technologies have made agricultural marketing more challenging. There are several risks involved in agricultural marketing. Pricing of agricultural products depends upon season ability and perish ability, demand and supply. Agriculture is an important and a

precious tool of Indian economy (Shakeel-Ul-Rehman et al., 2012).

Analysed the role of agriculture in economic development of Pakistan taking data from the year 1980 to 2010. The result of the study suggests that there is the significant role of agriculture sub-sector towards the economic growth only forestry showed insignificant relationship with GDP. (Raza, Ali, and Mehboob 2012)

Agricultural marketing includes the activities such as planning-production, growing and harvesting, grading, packing, storage, processing, promoting and selling-involved in transferring agricultural products from the farm to the consumer. (Vadivelu & Kiran, 2013).

Indian rural market is fascinating as well as challenging. Rural marketing has a great potential for growth in future. Rural India is becoming more accessible because of ambitious rural road connectivity programme (Prime Minister Gram Sadak Yojana), satellite TV, internet, mobiles and modern automobiles. Today, rural consumer has become aspirant, quality conscious and well acquainted with branded products and services. (Kale 2016).

CURRENT SCENARIO OF AGRICULTURE

Agriculture is the primary source of livelihood for about 58% of India's population. Share of agriculture and allied sectors in gross value added (GVA) of India at current prices stood at 17.8 % in FY20. Indian food and grocery market is the world's sixth largest, with retail contributing 70% of the sales. The Indian food processing industry accounts for 32% of the country's total food market, one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth. Principal agricultural commodities export for April 2020 - January 2021 was US\$ 32.12 billion. There are about 7157 number of regulated markets in India as on March 2010 as compared to only 286 in March 1950. There are also 22221 rural periodical markets, about 15% of which functions under the ambit of regulation. Average area served by a market is 115 sq. km while an average area served by a regulated market is 454 sq. km. According to recommendation by National Farmers Commission, availability of markets should be within 5 km radius. Lack of transportation is a cause of heavy loss of farm product. In case fruit and vegetable production, there is about 30-40% loss records every year. Only 7 % value addition takes place and only 2 % of production is processed commercially.

DIGITAL MARKETING

The promotion of agricultural products diverse through electronic media is known as digital marketing. Digital marketing has become most important part of all forms of communication and is crucial to the success of agriculture. The best fresh products are offered to clients and farmers through digital marketing at the best costs. By addressing their needs and wants, it also improves the bonds between farmers and their customers.

Application of Digital agriculture Marketing involves different technologies such as:

- Artificial intelligence (AI)
- Big data analysis tool.
- Machine learning (ML).
- Remote sensing
- Internet of things.
- Block chain and smart contracts.
- Transforming agricultural value chains and modernizing operations.
- Sensors that includes food sensors and soil sensors.

- Automated Section Control.
- Advanced Imaging technologies includes satellite and drone imaging, temperature grading, moisture grading and field.
- Automated machinery and agricultural robot.

FUTURE OF DIGITAL AGRICULTURE IN INDIA

The future of digital agriculture in India holds great promise, driven by technological advancements and the need to address challenges in the agricultural sector. Technological intervention based on remote sensing, soil sensors, drones and market insights etc. Implementing these specialized solution enables dependable managing and monitoring of farms.

- Increase agriculture productivity and lowest in the production cost
- Constrains soil degradation the land
- It may reduce in use of Chemical fertilizer.
- It will promote adequate and required use of water resources.
- Reduce in environment impacts.

Here are some key aspects of what the future might look like:

Use of information technology and Sensors and drone Technology:

Farmers will increasingly adopt IoT devices and sensors to monitor soil conditions, crop health, and weather patterns. This will enable precise application of water, fertilizers, and pesticides, improving yield and reducing waste. Drones will be used for crop monitoring, aerial spraying, and even planting seeds in large areas, increasing efficiency and reducing labour costs.

Data-Driven Decision Making

With the rise of data collection through IoT, there will be a significant increase in the use of big data analytics to predict trends, manage risks, and make informed decisions about crop management, market pricing, and supply chain logistics. AI-driven tools i.e AI and Machine learning will help in predicting weather patterns, pest infestations, and optimal planting times, thus improving productivity and reducing losses.

Smart Irrigation Systems

Smart irrigation systems will optimize water use by delivering the right amount of water at the right time, based on real-time data. This is crucial for a country like India, where water scarcity is a major issue in agriculture. Integration with Weather Data will be integrated with weather forecasting models to adjust irrigation schedules automatically, further conserving water resources.

Digital Marketplaces and Blockchain

Digital platforms act as direct to consumer platforms, it will enable farmers to sell their produce directly to consumers or businesses, reducing the dependency on middlemen and ensuring better prices. Blockchain technology will be used to create transparent and traceable supply chains, ensuring that farmers get fair prices and consumers receive quality products.

Mobile Applications and E-Governance

Mobile applications playing a crucial role in providing farmers with real-time information on crop prices, weather updates, pest control measures, and best farming practices. At the same time Government initiatives likely continue to promote digital tools and platforms to streamline subsidy distribution, crop insurance, and other agricultural services, making them more accessible to farmers.

Financial Inclusion and Digital Payments

Digital platforms will facilitate easier access to credit for farmers through digital lending and microfinance solutions, enabling them to invest in better technology and inputs. Digital payments based on mobile wallets and payment system will become more widespread, allowing for seamless transactions in rural areas and reducing the risks associated with cash handling.

Sustainable Agriculture

Digital tools will be crucial in promoting sustainable practices, such as crop rotation, organic farming, and the use of biofertilizers, which will help in mitigating the effects of climate change. Adoption of renewable energy sources, such as solar-powered pumps and machinery, will be promoted to reduce the carbon footprint of agriculture. Green initiatives play a vital role in the development of environment.

Challenges and Considerations

Bridging the digital divide in rural areas will be essential to ensure that small and marginal farmers can access and benefit from these technologies. Continuous education and training programs will be needed to help farmers understand and effectively use new digital tools. Improving rural infrastructure, including internet connectivity and electricity supply, will be crucial to the successful implementation of digital agriculture.

BENEFITS OF DIGITAL AGRICULTURE

Implementing these technological solutions enable reliable management and monitoring of farms. As farmers get a complete digital analysis of farms in real-time, they can act accordingly and don't have to apply excess pesticides, fertilizers and reduce overall water consumption. Other benefits include: -

- Increases agriculture productivity and lowers production cost
- Soil degradation
- Lessens chemical application in crop production
- Promotes effective and efficient use of water resources
- Uplifts socio-economic statuses of farmers
- Reduces environmental and ecological impacts
- Augments worker safety

OPPORTUNITIES TO RURAL FARMER IN AGRICULTURE MARKETING:

- **The Terminal Markets:** In this scheme introduced to promote of modern terminal markets for fruits, vegetables and other perishables products to important urban centres in India.
- **The Marketing Extension:** AGMARK quality control programmes as well as improvements in marketing practices and procedures are advertised through multi media. The information is provided through exhibitions, conferences, seminars and workshops.
- **The Marketing Research and Information Network (AGMARKNET):** This is a central sector scheme that was launched by the Department of Agriculture and Cooperation in March 2000. This includes networking of markets, development of regional portals, market-led extension activities and development of market atlas on Global Information Systems (GIS) platform, etc.

- **The Construction of Rural Godowns:** The Department of Agriculture and Cooperation introduced a central sector scheme, the 'Grameen Bhandaran Yojana', in March 2002 to promote the construction of rural godowns.
- **Grading and Standardization:** The scheme for the development and strengthening of agricultural marketing infrastructure, grading and standardization was launched on 20 October 2004.

CHALLENGES OF RURAL AGRICULTURAL MARKETING.

Some of challenges that might facing in the rural markets are-

Transportation problems

Transportation is essential for movement of products from urban production centers to remote villages. In rural India transportation facilities are little poor. Nearly 80 percentages of villages in the country are not connected by well constructed roads. Many parts of India does not have proper road facility. Due to poor transportation facilities it is not possible for a marketer to access the rural market.

Warehousing problems

A storage function is most important, because there is a time gap between production and consumption of commodities. Agricultural commodities are produced seasonally but they are demanded over the year so there is need to store them. But in rural areas, there is lack of public as well as private warehousing. Marketers face problems of storage of their cultivated products.

Underdeveloped people and underdeveloped markets

Rural society in India is underdeveloped. Modern technology has tried to develop the people and markets in rural areas. But the technology has made very less impact in rural areas.

Inadequate in media

Media have lots of problem in rural areas. Television is a good source to advertise the message to rural people even the people can't read they can understand the visual of the information. But due to non availability of power as well as television sets, majority of rural population cannot get the benefits of various media.

Many languages

India is a country of many languages. Language becomes barrier in effective communication in the market efforts. The number of languages vary from state to state, region to region and district to district, etc.

Low level of literacy

The literacy rate is low in rural areas as compared to urban areas. Marketers face communication problem due to the lack of literacy rate. Print medium is not much effective and it is irrelevant since its reach is poor. So, low level of literacy becomes challenge for marketers in rural areas.

Seasonal demand

Seasonal demand is main problem of rural market. Agriculture situation plays a significant role in the demand of commodities in the rural market because it is the main source of income. Again agriculture depends on monsoon so buying capacity of rural consumers varies. Despite this many rural areas are not connected by rail transport. Under developed roads become unserviceable during monsoon.

Lack of Market Intelligence

Farmers are not aware of the ruling price that prevails in the big terminal market as a result they accept any manipulative price that is offered by trader marketer.

RECENT TRENDS IN AGRICULTURAL MARKETING:

Agriculture has changed from deficit sector to surplus sector. New methods of marketing like Contract farming are visible, providing farmers with better returns. The Tata's, The Birla's, The Mahindra's and other corporate houses are entering and expanding agricultural business. Bilateral, Regional and Trade agreement have provided way in reducing tariff and non-tariff barriers to cross boarder flows of agricultural output and increased openness of financial markets. Liberalizations and globalizations have provided opportunities in transforming agro-food markets in India. National Spot Exchange Limited is another type of nationalized transparent electronic spot exchange established in 2005 headquartered in Mumbai. It is a state of art market place providing customized solutions to various problems faced by agricultural producers, processors, exporters, importers, investors and general commodity stakeholders.

Grameen Sanchar Society (GRASSO), the e-seva Kendra provides agri related services like access to market, price for agricultural products, availability of cold storage facilities, availability of labour and work opportunities. Agricultural and Processed Food Products Export Development Authority functions as a link between Indian producers and the global markets and also provides financial assistance under various schemes to promote and develop agricultural exports. ITC's e-choupal also achieved considerable success in agricultural marketing. ITC has set up a small internet kiosk at the village level to provide farmers real time market and pricing related information. More over websites like ikisan.com, krishivihar.com, agriwatch.com and ommodityindia.com provide information to farmers on production and marketing of agricultural commodities.

ROLE OF AGRICULTURE IN THE NATIONAL ECONOMY

India is an agriculture based country, where 70 percent population is depending on agriculture. It is the main source of income. The share of agriculture in the national income in India is more, hence, it is said that agriculture in India is a backbone of Indian economy. Importance of agriculture in our economy can be judged through mainly through its contribution.

CONTRIBUTION OF AGRICULTURAL SECTOR IN GDP

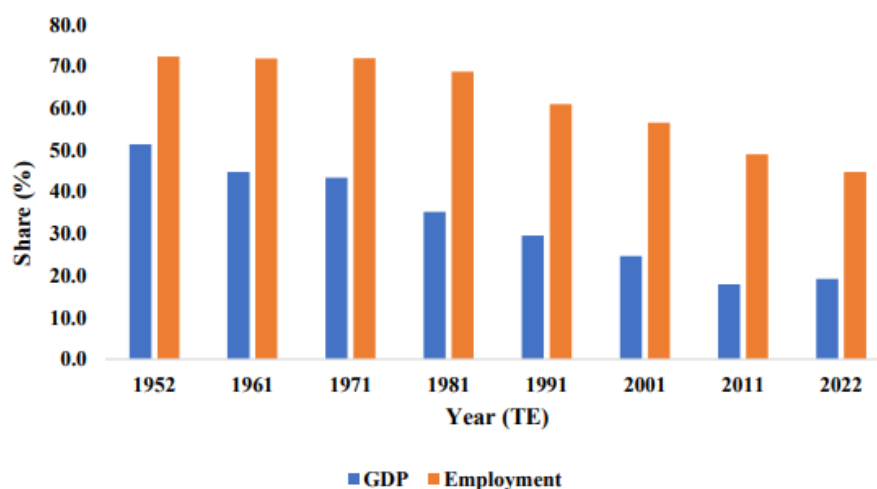
As per the Second Advance Estimates of National Income, 2022-23 released by Ministry of Statistics & Programme Implementation (MSPI), the share of Gross value added (GVA) of agriculture and allied sectors in total economy and growth of GVA of agriculture and allied sectors for the years of 2017-2018, 2018-2019, 2019-2020, 2020-21, 2021-22 and 2022-23 are as under:

Year	Share of GVA of agriculture and allied sectors in total economy (%) at current prices	Growth of GVA of agriculture and allied sectors (%) (at 2011-12 prices)
2017-2018	18.3	6.6
2018-2019	17.6	2.1
2019-2020	18.3	5.5
2020-2021	20.3	4.1
2021-2022	19.0	3.5
2022-2023	18.3	3.3

Agriculture's Share of GDP Agriculture is the most important source of national income for many developing countries. Direct contribution of agriculture sector in GDP can be reflected through share of GVA and allied sector and growth of GVA of agriculture and allied sector. Agriculture share of GDP in India was 18.3 percent in 2017 but in recent its share has come down. In 2023 agriculture contributed around 18.3 percent to GDP. Growth of GVA was 6.6 percent in 2017 and in recent 3.3 percent. Evidence shows that as economy grows share of agriculture in GDP have continued to decline over the years.

Share of agriculture in GDP and employment in India

Figure 1. Share of agriculture in GDP and employment in India



Source: Ministry of Statistics and Programme Implementation (India, MoSPI2023a).

Note: TE = Triennium Ending

Year	GDP in percentage	EMPLOYMENT in percentage
1952	50%	70%
1961	40%	70%
1971	40%	70%
1981	30%	68%
1991	28%	60%
2001	26%	59%
2011	20%	50%
2022	25%	48%

Source: Ministry of statistics and programme implementation.

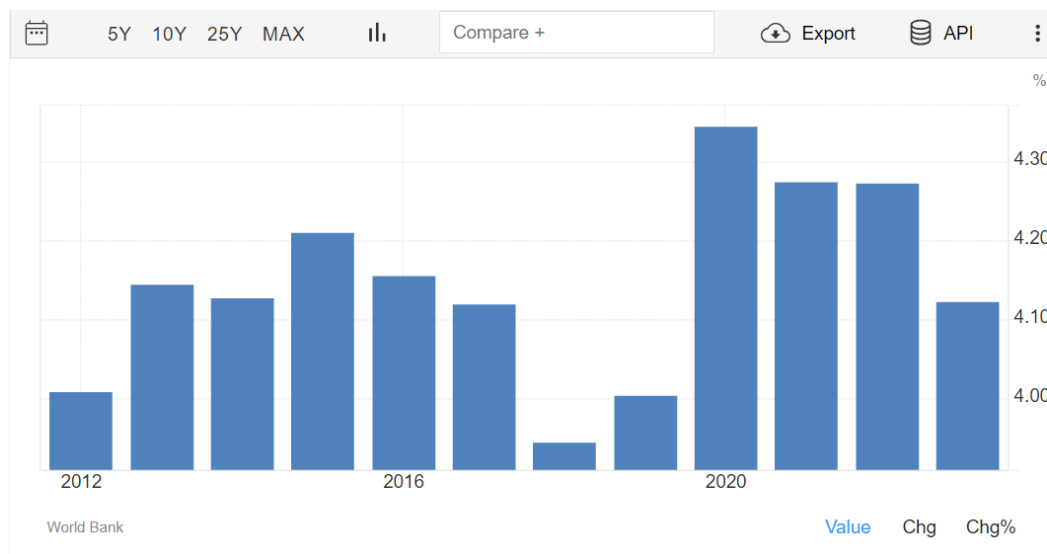
MAJOR AGRICULTURE PRODUCTION AND ALLIED PRODUCTS(MILLION TONS)

Crops	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
Rice	118.9	124.4	129.5	135.8	106.3
Wheat	107.9	109.6	107.7	110.5	
Nutri-cereals	17.3	18.0	16.0	17.3	12.7
Oilseeds	33.2	35.9	37.6	41.4	21.5
Sugarcane	370.5	405.4	439.4	490.5	434.8
Cotton	36.1	35.2	31.2	33.7	31.6
Jute and Mesta	9.9	9.4	10.1	9.4	9.2

Source: APY Statistic Directorate of Economic & Statistic, Department of Agriculture and Farmer Welfare.

World - Agriculture, Value Added (% Of GDP)

Agriculture, forestry, and fishing, value added (% of GDP) in World was reported at 4.123 % in 2023, according to the World Bank collection of development indicators, compiled from officially recognized sources. World - Agriculture, value added (% of GDP) - actual values, historical data, forecasts and projections were sourced from the World Bank on July of 2024.



IMPLEMENTATION OF DIGITALIZATION IN RURAL AGRICULTURAL MARKETING

KISAN Mandi Online Agris

On April 26, 2016, it established itself in the market as a private limited company and was later designated as a startup by the Department of Industrial coverage Policy and Promotion of the Government of India. The first agricultural company in India to launch a free online marketplace for farmers is Kisan Mandi Online Agri Market Private Limited (KisanMandi.com). With the aid of Gramme Sahayaks, KisanMandi.com is helping farmers with the grading, packing, and logistical support they need to sell their agricultural products directly to consumers. This will enable farmers to receive a higher price for their crops than what the APMC mandi pricing now offers.

E-CHOUPAL

In the year 2000, the Indian Tobacco Corporation (ITC), which is a limited company, initiated the formation of its department of digital marketing. Through the use of the internet and several other kinds of digital media, e-Choupal is a platform that facilitates the connection of rural farmers with consumers of agricultural products such as coffee, soybean, wheat, Rice, Pulses, and Oil seeds ITC will offer and internet connectivity so that farmers may directly negotiate price and sale. The provision of services by e-Choupal has led to an increase in the amount of money that farmers take home with them. According to the most up-to-date information that can be found, the ITC company is now offering services to consumers and farmers in more than 6155 e-Choupals that are spread out throughout 3513 villages in 11 different states in India.

MARKET

A website for online commerce that brings together 585 separate markets located in 16 different states. On the e-NAM platform, transactions involving agricultural goods totaling more than 164,53 lakh M.To ensure the integrity of the commodities, it was devised to streamline the process of moving agricultural products from one market to another as much as humanly feasible.

NAFED

At the national level in our country, this organization has the position of being the top governing body for the cooperative marketing system. It is an exceptional and oldest cooperative organization that was established in 1958 for the benefit of the farmers of Indian Horticultural crops. Its goal was to provide farmers with a means to pool their resources and share information. It is to the advantage of the farmers since it does away with the need for middlemen, which leads to more profits and improved pricing.

IKAN

It is a company that helps farmers with all facets of their operations, from seed planting to seed sales, by using information technology. It provides details on the market, how much products cost, the weather, and different farm management strategies, among other things.

App UZHAVAN

The Tamil Nadu government recently unveiled this brand-new app. Both Tamil and English versions are available. The system, which is based on Android mobile apps, offers farmers all the market data and extension services they want. It provides farmers with 12 essential agricultural services, such as real-time crop pricing information and marketing connections.

NAPANTA APP

It's a website platform that was developed to assist farmers in rural Andhra Pradesh and Telangana. Along with market data for more than 3,650 agricultural marketplaces, graphs and charge trends for more than 95 different commodities for the preceding three continuous years may be provided. It gives farmers advice on where and how to get a free soil test done, as well as how much urea to use based on the kind of soil. It will be met by this material, but if they have any special questions, they may still contact the Agriculture Forum of NaPanta, which is made up of retired agriculture officers, scientists, and other professionals.

DEHAAT

It is one of the Agri Tech sector's fastest-growing startups and one of the few businesses offering comprehensive services and solutions to India's farming community. On a single platform, it also links farmers with suppliers and buyers. Farmers can purchase all agricultural goods and services on an online marketplace.

CONCLUSION

There is no doubt that in any marketing there is a motive towards profit involved and at the same time the marketing is to be based on certain values, principles and philosophies such as offering just and fair prices to the farmers who works hard. As the Indian Agriculture and Allied sector is on the verge of adopting modern technologies, such as AI/ML and agri-drones for agriculture. It plays vital role in supplying these advanced technologies to farmers. Agriculture is an important sector in contributing more revenue to the Indian Economy. With the greater importance agriculturist should have good marketing facilities as economy adopt new policies. Challenges and opportunities that the rural markets offer in the liberalized trade regime are also to be addressed.

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