DIGITAL MARKETING PRACTICES FOR AGRICULTURE PRODUCTS IN INDIA

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ABSTRACT

The article's main theme is how the internet and digitalization have fundamentally changed the globe. With the help of digital marketing, farmers can reach a larger audience of prospective customers and earn higher prices for their goods. It aids in the launch of new agribusiness enterprises. Due to the increasing literacy rate in rural areas and the development of agribusiness infrastructures, young farmers are eager to use digital marketing platforms. Farmers' mentalities are transformed via COVID-19, which pushes them to embrace digital marketing. This study aims to get a deeper understanding of farmers' viewpoints, levels of knowledge, and experiences about the impact of digital marketing on the agriculture sector. A total of 120 respondents' primary data were obtained to reach this objective. The data were tabulated and reviewed with the use of numerous statistical methods to achieve the objectives of the study. Like other businesses, agriculture has embraced internet marketing and is growing to new heights while providing services that are better than those offered in conventional marketing venues. Farmers may sell their products online in several ways. They further promote their agricultural products online. The agriculture industry sector is adjusting its marketing channels as a result. Farmers may now sell their agricultural products on IKISAN, NAPANTA APP, NAFED, e-Choupal, AGMARKNET, and other online marketplaces

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thanks to the "e-NAM" infrastructure, which our prime leader Narendra Modi launched. Agriculture marketing locates, creates, and delivers markets for agricultural products. Produce from agriculture includes food grains (such as rice, wheat, millets, red, green, and black grames), fruits (such as apples, bananas, oranges, lemons, and grapes), vegetables (such as peppers, tomatoes, brinjal, cocaine, carrot, beetroot, and potato), and commercial crops (Tobacco, Cotton, Sugar cane, etc.,). The agriculture marketing industry has changed during the last 60 years. The purchasing power of consumers has increased due to rising urbanization and income levels. Fertilizers, micro irrigation systems, and highyield seed varieties have helped raise agricultural output each year. ICT is being used by farmers, farmer groups, and FPOs to market their agricultural products online (ICT). Farmers and FPOs use Android phones to access the web, WhatsApp, Facebook, Twitter, and YouTube. They connect with local and international marketplaces using the digital data mentioned above to sell their agricultural products at the greatest pricing. Digital marketing is also useful. Digital marketing is used by all farmers—small, medium-sized, and large—to increase sales and pricing. Digital marketing eliminates commission brokers and middlemen so that customers can get farm-fresh goods at reasonable rates.

Keywords: Digital Marketing, Agri-Business, Agri-Products, Conventional Marketing, Government Schemes.

1. INTRODUCTION

India is a paradise for producing crops thanks to its long, north to south, and wide, west to east, lush fields. It also has a big population of around 140 crore people. Our country is second worldwide in the production of various crops. India's economy relies heavily on agriculture. Over 60% of Indian workers are employed in the agriculture industry. Farmers have a wide range of opportunities and means to market their products. Digital marketing offers enormous possibilities for agriculture in India to sell its products. The future of agri-output marketing will only improve in the years since digital marketing is so important for time savings, revenue development, and client acquisition.



Figure 1 Growth in the number of internet users

Farmers increasingly want and desire a mobile phone to progress with digital marketing and its information. Digital agriculture is currently attracting a lot of attention. Additionally, substantial developments and business dealings are going on in the area of digital agriculture. Every farmer wants to sell their agricultural products and services for the best price possible, whether they do it via offline marketing strategies or online distribution channels. To diversify their user or customer base, farmers choose online services. Compared to traditional marketing, digital marketing is more cost-effective and efficient. Research by the Internet and Mobile Association of India (IAMAI) predicted that by 2022, India will have 479.1 million internet users. This supports the development of the digital agriculture sector and expands farmers' (sellers) and customers' options for buying and selling agricultural products (buyers). Additionally, these digital marketing products and services will satisfy the needs and tastes of our gorgeous, increasing Indian population.

1.1 AGRICULTURAL PROFILE OF INDIA

India has worked very hard to increase agricultural production, and as a result, it is currently considered second only to China in terms of producing rice, fruits, and

vegetables. Agricultural marketing contributes greatly and significantly to the distribution of output to consumers (customers). Through digital marketing, farmers get paid the highest prices feasible while customers obtain the freshest food available. The relationships between farmers and consumers are reinforced as a consequence of meeting and satisfying the needs and wishes of the clients.

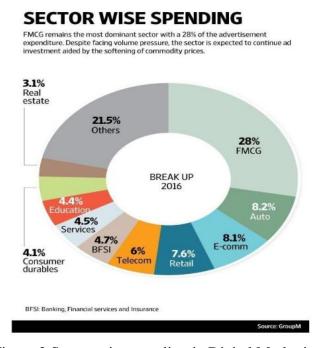


Figure 2 Sector-wise spending in Digital Marketing

Assistance in the Marketing of Agricultural Products and Services Increasing amounts of money are being spent on advertising by businesses that create fast-moving consumer goods (FMCG). When compared to the percentage in other sectors, the share of the rapidly moving consumer products business is as high as 28 percent. This is much higher than the proportion in other industries. These companies are doing a fantastic job of serving the needs of both the producers (the farmers) and the consumers (the customers) via the medium of digital marketing as well.

1.2 DIGITAL MARKETING PRACTICES

Villages may be found across India. The growth of the country's rural areas is the single most essential factor in this process. The government has made several initiatives to promote rural development. One of the innovative advances that the government has made is the creation of digital marketing, which allows for the digital sale of items without the involvement of any middlemen. Farmers that

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want to sell their goods all over the world might benefit from digital marketing. The Digital India campaign, which was initiated on July 1st, 2015, was successful in accomplishing its aims of converting rural India into an economically empowered digital environment. As a direct result of this development, several other sectors have begun offering their wares for sale online. Young farmers are eager to utilize digital marketing technologies to expand the market for their goods internationally.

- 1. PPC Advertisement- Running a pay-per-click (PPC) campaign is an effective strategy for digital marketing that may boost conversions and lead generation. Utilizing internet marketing allows for the possibility of wide publicity for modern agricultural machinery, which has undergone significant development. PPC advertisements will result in an improvement not only in the rankings on SERPs but also in the quality of the organic search results. When using payper-click (PPC) advertising, money is only required when a user clicks on the ad. If you place bids on a range of keywords or phrases, your advertisement has a better chance of appearing in the top search engine results. It's possible that using digital marketing strategies might be a major game-changer when it comes to earning leads or sales. It helps to boost the production of agricultural commodities, which in turn stimulates interest among those who follow the movement. PPC commercials are responsible for 81 percent of the increase in brand recognition, and you may make use of online resources to grow your agricultural business.
- 2. Create Social Media Page- The use of social media, a relatively recent development in the agricultural industry, is an essential component of the effective marketing of agricultural products and services. Through the use of a variety of social media channels, important connections can be made with customers, the general public can be informed about innovative agricultural methods, and partnerships can be formed. Establish a presence on social media by signing up for accounts on a variety of platforms, such as Facebook, Twitter, and Instagram, and begin publishing information that is pertinent to your agriculture business.

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It helps to foster the growth of a thriving community and piques the interest of potential customers in your business. You might be able to connect with your target audience if you use blogs, articles, and interesting topics in your content.

- 2. Marketing via Paid Social Media -Paid social media advertisements to offer opportunities for developing e-commerce or business-to-business relationships. These function in a manner that is analogous to that of cost-per-click advertisements, and the act of marketing products through popular mainstream channels contributes to the simplification of the user experience. It makes it possible for agricultural businesses to expand their online presence and increase their profits. The use of sponsored advertisements on social media platforms is contributing to the growth of the e-commerce industry. In addition, it clarifies the goals of agricultural marketing, which provides opportunities for network expansion in social media outreach. Tools that allow for the professional management of social media give marketers the ability to adapt their strategies to achieve the best possible results. It helps to establish a large social media following and gives search engine optimization with backlinks that are trustworthy and authoritative. To put it another way, it is useful for promoting your agricultural firm and raising awareness in new geographical regions.
- 2. Create an e-commerce website- Taking your agricultural enterprise to the next level of the marketing potential is made easier by the development of an e-commerce website. Customers are allowed to learn more about the goods and services offered by the firm, and agribusinesses see a rise in income as a result. It is to everyone's advantage to display the whole range of items available in the agricultural sector, such as food processing equipment and agricultural accessories. It is possible to get a lot of revenue by advertising the things that your business sells on e-commerce platforms. Collaborate with an organization that specializes in digital marketing and offers a comprehensive selection of web development services. The website will help increase the audience reach and the visibility of the business.

2. LITERATURE REVIEW

- 1) The selling of agricultural products in marketplaces that are administered digitally offers farmers a bigger number of benefits than the sale of agricultural commodities in conventional markets. This is because digital marketplaces are more efficient than traditional markets. In addition to this, it is different in each marketplace owing to the introduction of the infrastructure and the amenities that are made accessible to the customers and the vendors who are participating in the market. This is because the infrastructure and facilities that are available to clients and dealers in the market are uniquely tailored to their needs (Jairath, M. S, 2012).
- 2) Information and communication technology (ICT) is beneficial to the rural advertising sector because it simplifies the evaluation, commercial enterprise, and facilitation of smallholder advertising. This is done to make the purchase and selling of agricultural goods less difficult (USAID facet challenge, 2012).
- 3) The marketing opportunity presented by virtual agricultural advertising enables farmers to increase the prices at which they sell their agricultural goods, which in turn generates more revenue for the farmers (Ms. Kiruthiga, et al., 2015).
- 4) Important businesses located in the central business district are putting into practice very effective marketing tactics for the sale of agricultural goods over the internet (V. Nagendra., 2015).
- 5) According to Balu (2020), it's been hypothesized that a lack of appropriate extension offerings and restricted access to information are respectively chargeable for a gap in the adoption of generation and occasional levels of agricultural output. This is because a lack of ok extension offerings and restricted get admission to information can hurt agricultural output. In addition to this, he put strong stress on the need of gathering precise information at the appropriate moment to create advancements in the field of Indian agriculture. Young farmers may have a better chance of being successful in their agricultural endeavors if they make use of a tool that incorporates elements of the digital age.
- 6) Oseremen Ebhote (2020) concludes that virtual marketing is rather advocated for agricultural improvement because it correctly modifies agricultural practices. This leads him to the conclusion that virtual marketing should be the focus of advocacy for agricultural improvement. The evidence that is presented in the article may provide support for this conclusion. The government has a responsibility to take the necessary steps to increase farmers' awareness of the potential advantages that may be obtained via the use of online advertising, and it is obligated to do so.

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7) Sudhakar Reddy (2021) It is essential to make the point that digital marketing platforms are useful to farmers because they permit farmers to raise the selling price of their agricultural products while simultaneously reducing the cost of marketing those products. This is why it is important to make the point that digital marketing platforms are beneficial to farmers. That is a significant benefit that farmers may get from this. Products such as cotton lint, rice, maize grains, and vegetables are some examples of the kinds of goods that may be obtained through agricultural production. It is to absolutely everyone's advantage to utilize virtual marketing as a tool for doing business as well as gathering data, and this is because of the benefits that come from doing so. In addition to this, he claims that the use of digital media is a factor that helps in the selling of large amounts of agricultural products. He asked the government of India as well as the governments of the individual states to prepare strategies and establish rules so that one might result in the consistent expansion of the virtual agriculture sector.

The influence that digital marketing, information, and communication technology solutions have on agricultural enterprises is as follows:

Over the course of the last several decades, governments have taken an active role in agricultural marketing to foster the expansion of the agricultural sector and support its further development. We are in a position to significantly advance the marketing of agricultural products using digital applications from start to finish in this world that is becoming increasingly controlled by digital technology. This position puts us in a position to significantly advance the marketing of agricultural products. Farmers with modest farm holdings may discover numerous clients for their agricultural commodities who are willing to pay higher prices because the things are fresh with the assistance of information and communications technology. In the past, farmers with modest farm holdings would only do business with a select few customers, all of whom would pick up their products personally. A greater number of customers are making purchases using the digital agriculture marketing approach that is now being used. Farmers now have access to market information thanks to digital and internetbased applications that are included in android phones. This has the potential to minimize market distortions, losses incurred due to logistics and transportation, as well as product spoilage and damage. In the national and worldwide digital marketing situation, Android mobile and internet-based digital apps may aid in the process of

identifying farmers, agri-input dealers, agri-out put purchasers, storage warehouses, and recognized financial institutions to invest. As a direct consequence of this, farmers are realizing increased income from the sales of their harvests on digital agricultural platforms. The word "Blockchain" refers to a kind of technology that may identify deficient standards of quality in the food grain supply chain of any agricultural product. This makes it possible for early and effective action to be taken against the firm in the issue. Customers thus have the opportunity to achieve a competitive advantage for themselves. Walmart is using a technology known as "Blockchain" to trace the origin of every bag of agricultural products that it purchases straight from the farm. This allows Walmart to ensure that the products it sells are of the highest quality. It helps to ensure that the customers get fresh agricultural products of high quality. Customers and farmers are both receiving the essential information that they need daily thanks to the efforts that are being conducted by organizations that operate in the private sector. Through the use of e-choupal, numerous organizations in India, including I.T.C., Reliance, "More" (Aditya Birla group), AGMARKNET, M & M (Shubhlabh), Godrej group, N.A.F.E.D., NAAPANTA APP, A.P.M.C., etc., are playing an important and responsible role in ensuring the wellbeing of the farmers in the country. When applied to the promotion of agricultural goods, digital marketing leads to an increase in revenue, which is especially beneficial for smallholder farmers (farmers). As a consequence of this, young people who come from rural regions and have very small holdings are being encouraged to continue working in agriculture since the future of the business seems to be bright.

KISAN MANDI ONLINE AGRIS:

On April 26, 2016, it launched its activities in the industry as a personal limited company, and it was later acknowledged as a startup by the department of industrial coverage and advertising of the government of India.

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 has made it possible Research Paper

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for farmers in remote regions to have direct dialogues about market pricing and other pertinent information by distributing computers and providing internet access in such locations. Farmers often turn to digital media to get information on a wide range of subjects, such as the current state of the market, the most effective agricultural practices, and weather predictions. They may also get essential agricultural chemicals, manures, and other farm supplies through making use of digital media, which is made possible by the internet. This gives them an advantage over their competitors. Farmers who have been registered with the ITC and have received training are running kiosks in the villages in which they reside. Each kiosk can serve over 600 farmers within a radius of five kilometers, which includes 10 communities. This service area also includes the surrounding area. Because of this, there is no need for a middleman to be present. 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.

RELIANCE GROUP:

The CEO of the Reliance Group, Mr. Mukhsh Ambani, has developed a strategy to rapidly establish a 5,000-acre contract farming enterprise in the states of Karnataka, Andhra Pradesh, and Telangana. As a consequence of this, the potential exists for it to develop into one of the most important agricultural commercial centers for the distribution of agricultural goods. In addition to this, one of our goals is to create warehouses throughout the whole of India. Because Reliance Fresh Stores will be purchasing the fruits, vegetables, grains, and other agricultural commodities directly from the farmers, this will result in considerable savings in terms of time, energy, and labor, in addition to cost reductions related to transportation.

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.Ts have taken place. 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.

Research Paper

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.

MAHINDRA AND MAHINDRA Group

Two divisions of the Mahindra & Mahindra corporation were founded in 2000, one of which was called the Mahindra Krishivihar in Madhurai, to offer agricultural extension services to farmers and large-scale product buyers. The second one is named "MAHINDRA SHUBH LABH," and it is a division that sells agricultural equipment including tractors, disc harrows, power tillers, and seed drills for fertilizer.

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.

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. Its production featured Telugu and English speakers on staff.

CHALLENGES FOR E-MARKETING OF AGRICULTURAL PRODUCTS:

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- (1) Due to their lack of computer literacy, some farmers are unable to utilize android smartphones since they don't comprehend how they operate. As a result, issues with them about the sale of agricultural products might arise.
- (2) The nature of competition on a global scale may be summed up as follows: there are multiple sellers from numerous countries and regions. As a result, it is hard to predict when and at what price Indian farmers will sell their products.
- (3) There is no security, and farmers sometimes browse phony internet portals or fraudulent websites. We'll be wasting our time and energy on this.
- (4) Since many consumers still prefer to make purchases in person, one cannot only depend on internet marketing. As a result, it is essential to also depend on offline marketplaces to some extent.

3. RESEARCH METHODOLOGY

- 3.1 RESEARCH DESIGN
- 3.2 DATA COLLECTION

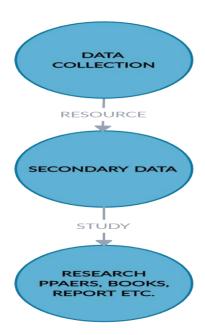


Figure 3. Data collection flow chart

3.3 THE 4Ps MODEL

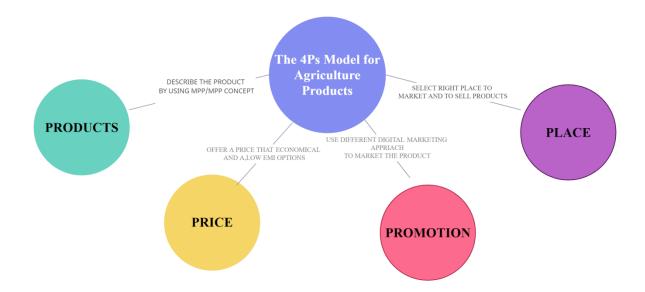


Figure The 4Ps Model

It is essential to pay close attention to each of the four Ps and to strategically put those considerations into practice to successfully market a product or service. The product, the cost, the location, and the promotion are some of these factors.

The four Ps are often referred to as the separate elements of the marketing mix. When marketing a product, several factors are taken into account, including what consumers want, how the product or service meets or falls short of those wants, how the product or service is perceived in the world, and how it stands out from the competition, and how the company that makes it engages with its customers.

- Production
- Price
- Place
- Promotion

Product- The first step in creating a successful marketing strategy is understanding the product being advertised. Who needs it, and for what reasons? What is it that other goods on the market cannot do, but this one can? Since this essay is about agriculture, we are aware that the farmer is the one who produces our wheat, pulses, rice, vegetables, etc. It's conceivable that the item is brand-new and has an alluring appearance or feature that will make people want to buy it as soon as they lay their eyes on it. The marketer's job is to explain the product to the consumer while also outlining the product's attributes.

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Price- A product's pricing reflects the sum of money that consumers are willing to spend on it. Marketers must link a product's price to both its real and perceived value, while also taking into consideration other aspects including supplier prices, retail markup, seasonal discounts, and pricing provided by competitors. A corporation may decide to offer a product at a higher price in certain situations if it wishes to give the impression that it is exclusive or opulent. As an alternative, they may lower the cost to persuade more people to try it.

Place- Manipur is the location in this case. Place refers to where a product should be sold, both offline and online, as well as how it will be shown there. Locations both offline and online may be referred to as places.

Promotion- The goal of marketing is to persuade potential buyers that this product is something they desire and that paying the price is reasonable to get it. Promotion of a new product on the market today includes a whole media strategy in addition to public relations and advertising. When seeking to target their core consumers, entrepreneurs often combine several merchandising and location-related factors into a single strategy. For instance, "placement" and "merchandising" are aspects of contemporary international business that rely on both offline and online. The specific kind of search activities that result in the display of targeted adverts for the product, such as finding a product on a company's website or social media platforms. The choice is significant: producers of luxury cosmetics would want to sell their products in stores like Sephora and Neiman Marcus rather than Walmart or Family Dollar. Marketing a company's products to customers who are most likely to make a purchase is the main goal of executives in charge of running a business.

4. RESULT AND DISCUSSION

4.1 MAJOR FINDINGS

Due to changes in technology, there has been a change in the manner in which goods and services are marketed. A growing number of organizations are becoming interested in digital marketing due to its many benefits. These benefits include affordability, flexibility, and time and cost savings. However, a sizable portion of farmers in the agricultural sector is ignorant of the potential benefits of digital marketing in helping them sell their products. This study aims to ascertain the beliefs of farmers and dealers, as well as the level of knowledge regarding digital marketing in the agricultural sector and its benefits and drawbacks. The goal of promotion is to convince consumers that they need this product and that paying the price is acceptable

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to do so. Promotion of a new product on the market includes not just public relations and advertising, but also a comprehensive media plan.

Marketers often mix many parts of promotion and placement into a single approach when attempting to target their key clients. For instance, in today's world, "placement" and "promotion" are factors that matter both offline and online. Particularly, the positioning of a product on a business's website or social media channels, as well as the specific types of search operations that will lead to the display of the product's targeted adverts.

5. CONCLUSION AND FUTURE SCOPE

The purpose of this study was to investigate how farmers in India use digital marketing to promote their products. The research's conclusions indicated that the introduction of Android smartphones has been the most important development for farmers because it has made it possible for them to market their products online using apps and other web-enabled services. It provides in-depth details on the selling prices, meteorological information, a variety of crop-growing methods, as well as the supply and demand of the crop or farm product. As a consequence, farmers are making the earnings from their agriculture that they had expected as well as the prices they anticipated for their commodities. The high degree of distortion brought about by middlemen and the costs related to marketing make the conventional manner of selling agricultural goods no longer work. We must seek to further liberalize the agriculture industry and improve the farmer and customer experience on digital markets. Additionally, because this enables precise calculations of investment, profit, and loss, it is advised that agriculture be addressed as a business. Farmers will be able to reduce expenses that aren't strictly necessary for the growth of crops if this occurs. Crop cultivation and agricultural companies should typically be set up to achieve higher levels of profitability. Implementing a plan that would both reduce cultivation costs and increase crop production is crucial for maximizing profits. To promote the development of a digital agriculture economy that is sustainable, the governments of India and each of its states must create plans and policies. Effective models must be developed for both the social advancement and economic prosperity of rural agricultural communities. To do this, start building digital markets close to where the farmers are.

Infrastructure for digital marketing in agriculture, smart technology, and the Internet of Things in agriculture all need to be upgraded.

The federal government wants to treble the amount of money it receives from agriculture, and digital marketing is essential to attaining this objective.

REFERENCES

- I. Acharya, M. (2019, November 11). How incubators are driving the agri-tech sector in India. Analytics India Magazine.
- II. Adarsh, A., Pranav, P M., Manjunath, C. R., & Soumya, K. N. (2018). Fruit farm surveillance using drones. International Journal of Trend in Scientific Research and Development, 2(4), 351–357.
- III. Agarwal, A. (2016, January 2016). Big data analytics in agriculture. Agriculture Today, pp. 38–39.
- IV. Ai, F.-F., Bin, J., Zhang, Z.-M., Huang, J.-H., Wang, J.-B., Liang, Y.-Z., Yang, Z.-Y. (2014). Application of random forests to select premium quality vegetable oils by their fatty acid composition. Food Chemistry, 143, 472–478.
- V. Alexander, D. (2019). 9 robots that are invading the agriculture industry. Interesting Engineering. Applegate, L. M., Lakhani, K. R., & Bucala, N. (2015). Podium data: Harnessing the power of big data analytics.
- VI. Arokiaraj, D., Ganeshkumar, C., & Paul, P. V. (2020). Innovative management system for environmental sustainability practices among Indian auto-component manufacturers. International Journal of Business Innovation and Research, 23(2), 168-182.
- VII. Babu, S. C., Paul, N., & Kumar, A. (2020). The understanding food policy process in India: An application to food security act of 2013. In R. Saleth, S. Galab, E. Revathi (Eds.), Issues and challenges of inclusive development (pp. 121–140). Singapore: Springer.
- VIII. Bagchi, A. (2018). Artificial intelligence in agriculture. Retrieved from https://www.mindtree.com/about/resources/ artificial-intelligence-agriculture. Accessed on June 16, 2021.

- © 2012 IJFANS. All Rights Reserved, UGC CARE Listed (Group -I) Journal
- Balamurugan, S., Divyabharathi, N., Jayashruthi, K., Bowiya, M., Shermy, R., & IX. Shanker, R. (2016). Internet of agriculture: Applying IoT to improve food and farming technology. International Research Journal of Engineering and Technology (IRJET), 3(10), 713–719.
- X. Bambara, J. J., Allen, P. R., Iyer, K., Madsen, R., Lederer, S., & Wuehler, M. (2018). Blockchain: A practical guide to developing business, law, and technology solutions. McGraw Hill Professional.
- XI. Barton, D., & Court, D. (2012). Making advanced analytics work for you. Harvard Business Review, 90(10), 78–83.
- XII. Beecham, R. (2014). Towards smart farming. Gloucester, MA: Beecham Research Ltd.
- XIII. Borah, S., Hines, E., & Bhuyan, M. (2007). Wavelet transform-based image texture analysis for size estimation applied to the sorting of tea granules. Journal of Food Engineering, 79(2), 629–639.
- XIV. Bordoloi, B. (2017, January 13). Big Data for the next green revolution. The Hindu Business Line.
- XV. Brini, M. (2019). Digital agriculture: In a nutshell digital agriculture: In a nutshell. Marco Brini, Brock, J. K.-U., & Von Wangenheim, F. (2019).