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Marketing Strategies and Issues in Agri Output and Agritech Mobile Apps: An Exploratory Analysis

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ABSTRACT

Background: Agriculture apps or Agri apps, are mobile platforms designed to assist farmers and agricultural stakeholders in managing various aspects of farming by providing essential tools, information, and services. These apps harness digital technologies to enhance productivity, efficiency, and sustainability in agriculture. Agri output apps primarily focus on market linkages and logistics, directly connecting farmers with buyers, while Agri tech apps offer advisory services, input procurement, and data-driven solutions to optimize farming practices.

Methods: The present study employs an exploratory design, relying on secondary data sources such as app descriptions, user reviews, industry reports, and academic papers. Qualitative analysis is used to evaluate the selected apps based on their relevance, innovation, and user impact. The paper identifies key features, unique selling propositions (USPs), and challenges in adoption.

Result: It was found that Marketing strategies for these apps encompass grassroots outreach, social media engagement, and referral programs to address diverse user needs. While rural farmers are engaged through direct communication, tech-savvy users are targeted through online marketing. However, it was found that challenges such as technical issues, limited language support, order tracking difficulties, and security concerns affect user engagement and trust. By enhancing app functionality, offering multilingual support, optimizing logistics, and strengthening security measures, these challenges can be mitigated, enabling agri apps to better empower farmers with real-time updates, expert advisory services, and access to quality agricultural inputs, thereby reducing reliance on costly intermediaries and improving overall farm productivity.

Key words: Agri output, Agri tech, Features, Issues, Marketing strategies, Mobile apps.

INTRODUCTION

Agriculture apps or “Agri apps” are mobile applications designed to assist farmers, agricultural professionals and stakeholders in managing various aspects of farming and decision-making. These apps leverage digital technology, providing vital information, tools and services that enhance productivity, efficiency and sustainability in agriculture. A critical segment within this space is Agritech apps, defined as applications that integrate technology into the agricultural production process, encompassing areas like precision farming, crop monitoring and resource management. Separately, Agri output apps are specialized applications that focus on the post-harvest phase, streamlining market access, price discovery and supply chain logistics for agricultural produce. These applications play a transformative role by integrating innovative solutions into traditional farming practices, addressing challenges such as limited access to timely information, market inefficiencies and resource management. With Features ranging from real-time weather updates and soil analysis to market linkages and advisory services, Agri apps empower farmers to optimize yields, reduce losses and adopt sustainable practices. In the context of India’s agricultural sector, which contributes significantly to the economy and global markets, these apps are pivotal in overcoming structural inefficiencies and driving growth through technology-driven improvements.

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MATERIALS AND METHODS

The research employs an exploratory design, relying on secondary data sources such as app descriptions, user reviews, industry reports and academic papers. Qualitative analysis is used to evaluate the selected apps based on their relevance, innovation and user impact.

Review of literature

Mobile applications have revolutionized marketing strategies within the agribusiness sector. In a study by Babicheva and Havryliuk (2019), it was noted that mobile applications offer direct communication between farmers and buyers, which significantly enhances the marketing process. The ability to access a wide range of market data, including price trends and demand forecasts, allows farmers to make informed decisions and maximize profits (Babicheva

and Havryliuk, 2019). Furthermore, the adoption of mobile applications has been particularly beneficial for smallholder farmers in developing countries. Hoang (2020) found that mobile phones serve as a vital marketing tool for farmers in Vietnam, enabling them to reach broader markets for their crops. This is especially true for farmers involved in cereal production, where the use of mobile platforms for marketing is growing steadily.

The future of mobile applications in agricultural marketing looks promising. With advancements in internet connectivity and mobile technology, more farmers will be able to access these tools, creating new opportunities for market expansion and efficiency improvements. As noted by IBEF (2024), agritech start-ups in India are increasingly focusing on providing digital solutions that bridge the gap between farmers and markets, signalling a shift towards a more digital and interconnected agricultural landscape.

Mobile applications have emerged as a powerful tool for enhancing agricultural productivity and knowledge. Barh and Balakrishnan (2018) elaborated various agricultural mobile applications which potentially can be used in farming and allied activities as indicated by their source and usage. In India, there are enormous opportunities for utilizing the smart phones as a part of agribusiness improvement. Its utilization is vital for quick growth and easy access to information to Indian agriculturists, farmers and growers.

Awari (2025) explored that apps have the potential to transform the agricultural sector, particularly in developing countries by providing farmers with access to real time information, expert advice and market linkages, these. However, challenges such as digital literacy, connectivity and data privacy must be addressed to ensure that these technologies reach their full potential. Karthikeyan *et al.* (2024) reported about the positive feedback from the users of the TNAU Cattle Expert System Application on application's detailed information on cattle protection and disease precautions.

Despite the promising advantages, there are several challenges associated with mobile marketing in agriculture. Kalusopa (2005) highlighted that small-scale farmers often face difficulties in accessing reliable internet services, which limits the effective use of mobile applications. Additionally, the digital literacy of farmers is a major barrier, as not all farmers are adept at using smartphones and related applications (Kalusopa, 2005). Meena *et al.* (2018) highlighted that 60% of farmers do not access any source of information for advanced agricultural technologies resulting in huge adoption gap. Kisan *et al.*(2025) reported that emphasis had been placed on the supply side rather than the demand side while implementing ambitious ICT interventions in developing countries. Hence, the main focus of the interventions has been the implementation the ICT for Development project and creating infrastructure rather than understanding the impact on the society level and integration of inbuilt checks and balances for sustainability of interventions.

Balkrishna *et al.* (2020) analysed 73 mobile apps used by Indian farmers in various agricultural sectors *viz.* farm management, fisheries, poultry, livestock and animal husbandry, food traceability and pure agriculture sectors with a respective availability percentage of apps were 12, 14, 14, 23, 23 and 14%. It was reported that mobile apps are working as a boon for farmers and transforming agriculture but still they have some gaps which should be checked and removed such as unawareness, limited users as most of them are not user friendly.

Sivakumar *et al.* (2022) further noted that while smartphone applications have proven to be beneficial for Indian farmers, the adoption rate is uneven, with some regions lagging behind due to inadequate infrastructure and limited access to mobile networks. This issue is critical in ensuring that mobile marketing tools can be universally accessed and utilized to their full potential.

Lokeshwari and Kumar (2023) carried out a systematic review of the current trends of mobile applications in farming for rural development. The findings clearly showed that a majority of farmers own and use mobile phones for a variety of purposes however the usage depends on the information, content and mandate of application development. To make agribusiness productive, smooth and respectable it is important that, it should be linked to recent technologies.

Shaktawat (2023) concluded in their study that around 26.67 per cent of the farmers uses the learning and reference apps followed by farm management apps (20.00 percent), market data apps, crop specific app, social connecting apps(13.33 percent) and, lastly business apps, diseases and pests apps (6.67 per cent). It can aid researchers and marketers in formulating effective strategies to better understand user preferences and requirements. Nandhini *et al.* (2024) analysed farmers perceptions of digital transformation and showed that willingness to adopt digital marketing was influenced positively by gender, income, education and occupation.

Srivastava and Jha (2022) analyzed that having a strong purpose statement on website is highly significant followed by a positioning statement to attract the client's attention. Clients considered various metrics influencing the Online Personality and USP. Furthermore, results from the multidimensional scaling also showed that having a strong social media presence is exceptionally important for digital marketing agencies.

Verma *et al.* (2025) in their study of farmers in Haryana stated about limited knowledge of digital marketing, especially regarding platforms like E-NAM, marketing websites and Facebook with low knowledge score restricting their ability to utilize digital marketing tools effectively. While they are familiar with social media, its use for agricultural marketing remains minimal. Targeted training on advanced digital marketing concepts including SEO and paid advertising is crucial to enhancing their skills.

RESULTS AND DISCUSSION

Major features and services offered by various Agri Output and AgriTech sector apps

Table 1 highlights how Agri output apps create direct market linkages, streamline logistics and enhance financial transparency, reshaping the agricultural landscape. Apps like Agri Bazaar and Bijak facilitate seamless connections between farmers and buyers, ensuring real-time price discovery and reducing dependence on intermediaries. NinjaCart and DeHaat Kisan optimize supply chains for perishable goods through cold storage solutions and demand forecasting, minimizing losses and improving efficiency. Direct-to-consumer platforms like Farmizen and AgriBolo cater to niche markets, strengthening urban-rural linkages by providing fresh produce directly to consumers. Additionally, these platforms empower farmers with secure transactions, buyer ratings and digital records, fostering transparency, trust and improved income opportunities in agricultural markets.

Table 2 highlights how Agritech apps provide tailored advisory services, pest management, input supply and market access, transforming Indian agriculture. Apps like Krishi Network and Plantix empower farmers with localized advice and AI-based diagnostics, helping reduce losses and enhance yields. BigHaat and IFFCO Kisan streamline input procurement with quality assurance, ensuring access to reliable agricultural inputs. Meanwhile, Gramophone and KisanKonnect strengthen market linkages, enabling farmers to sell their produce at competitive prices. Educational platforms like BharatAgri focus on community building and knowledge sharing, fostering informed decision-making among farmers. Collectively, these apps boost productivity, improve farmer incomes and promote sustainability, driving digital transformation in Indian agriculture.

Unique selling proposition and marketing strategies of various agri output and agritech sector apps

Table 3 highlights how Agri output apps like Agri Bazaar, Farmizen, AgriBolo, DeHaat Kisan, NinjaCart, Bijak and KhetiGaadi differentiate themselves through unique USPs such as digital marketplaces, organic farming, B2B Transparency and machinery access. Their marketing strategies include influencer campaigns, grassroots outreach and strategic partnerships, ensuring they cater to diverse farmer needs. By leveraging technology, these apps enhance market access, streamline logistics and provide tailored services, ultimately empowering farmers with innovative, user-centric solutions that improve efficiency, profitability and sustainability in agriculture.

Table 1: Features and services provided by agri output.

Agri app	Features	Services provided
Agri bazaar	Online market place for crop trading. Digital payment system. Quality check and certification.	Direct connection between farmers and institutional buyers. Transparent pricing. Market price discovery.
Farmizen	Facilitates direct-to-consumer sale of organic produce. Subscription-based farming plots.	Connects farmers with consumers for fresh produce. Provides fruits, vegetables and grains grown without chemicals. Consumers can subscribe to a farm plot and get regular deliveries of produce.
Kheti gaadi	Provides tractor and farm equipment rentals. Enables farmers to sell used machinery.	Rental and purchase of farm equipment. Peer-to-peer equipment sharing.
Bijak	B2B marketplace for trading agricultural commodities. Digital ledger and transaction tracking.	Credit rating for buyers and suppliers. Real-time price discovery. Risk management with transaction tracking.
Ninja cart	Supply chain platform for fresh produce. Direct link between farmers and retailers.	Minimizes supply chain inefficiencies. Reduces wastage and improves price transparency. Logistics management for fresh produce.
DeHaat kisan	End-to-end agricultural services: Inputs, advisory and market linkages for output sales. Buyer connections for selling produce (B2B and B2C markets).	Connects farmers with buyers for better prices. Provides real-time market price information. Assists with packaging, storage and transportation.
Agri bolo	Online platform for selling crops directly. Market price updates for produce Government scheme notifications and expert advisory services	Crop selling to local and national markets. Weather forecasting. Market price discovery in real-time.

· Compiled from various sources.

Table 2: Features and services provided by agritech apps.

Agri app	Features	Services provided
Krishi network	Real-time farming advisory, connects farmers directly with buyers, including wholesalers and consumers. Community forum.	Expert consultations, marketplace for Agri inputs, crop advisory.
Plantix	AI-based plant disease diagnosis, crop advisory.	Disease diagnosis *via* image recognition, crop health monitoring.
Agri app	Information hub for farmers, expert advice.	Advisory on farming practices, weather updates, information on government schemes.
Bharat agri	Personalized agronomic advice, Weather updates and alerts, Input procurement services.	Subscription model for tailored advice. Real-time weather alerts. Crop health and management tips.
IFFCO kisan	Farmer helpline, expert advice, localized content.	Crop advisory, weather updates, mandi prices, farmer training through the helpline.
Kisan konnect	Marketplace for agricultural inputs and outputs, farmer-consumer connections.	Direct sales channel for farmers Access to inputs and produce, User-friendly interface for transactions.
Gramophone	Advisory services for crop management. Input purchasing platform. Pest and disease management guidance.	Personalized input recommendations. Real-time pest and disease alerts. Weather updates.
Big haat	Connects farmers with potential buyers for their produce, A developing platform for trading agricultural products digitally. Provides access to market pricing trends for better decision-making.	Offers guidance on storage, handling and packaging of produce., Provides information and insights to help farmers enhance value.

· Compiled from various sources.

Table 3: Unique selling proposition and marketing strategies of output sector apps.

Agri app	USP (unique selling proposition)	Marketing strategy
Agri bazaar	Digital marketplace with a wide range of farm produce and inputs.	Focuses on promoting the e-commerce aspect as an all-in-one platform for farmers. Uses digital marketing, partnerships with farming associations and social media out reach.
Farmizen	A unique subscription-based organic farming platform that lets users grow organic produce or rent a plot of land.	Markets heavily to urban consumers interested in organic produce. Uses social media, content marketing (blogs, recipes) and influencer marketing with a focus on sustainability and health benefits.
Agribolo	Comprehensive platform for selling crops with real-time market prices and weather updates.	Targeted advertisements on agricultural platforms. Informational content marketing through blogs and videos.
DeHaat kisan	End-to-end agricultural services covering inputs, advisory and market linkages in one platform.	Integrated marketing campaigns focusing on convenience. Collaborations with NGOs for outreach to farmers.
Ninja cart	Efficient supply chain and logistics support connecting farmers directly with retailers, cutting out middlemen.	Focuses on cost-saving benefits to both farmers and retailers. Promotes its service through partnerships with retail chains and direct farmer engagement. Also utilizes social media and local advertisements.
Bijak	B2B commodity trading platform connecting farmers and traders with a focus on transparency and trust-building.	Emphasizes reliability and ease of use in its marketing. Uses referral programs to onboard traders and focuses on building trust with testimonials from users, particularly in farming communities.
Kheti gaadi	Specialized marketplace for agricultural machinery, enabling farmers to buy, sell or rent equipment online.	Relies on targeted advertising through social media and rural outreach programs. Partners with machinery manufacturers and organizes demo events at agricultural fairs.

· Compiled from various sources.

Table 4 highlights the rapid evolution of the Agritech sector in India, with diverse apps offering unique features and tailored marketing strategies. Apps like Krishi Network and BharatAgri emphasize community engagement and personalized advisory services, while Plantix and Gramophone utilize AI and data analytics for crop management. Their marketing strategies range from social media and content marketing to SMS campaigns and referral programs, catering to different user segments. Findings suggest that apps targeting rural farmers rely on direct communication methods whereas tech-savvy users are engaged through digital marketing. These insights underscore the importance of strong USPs and effective marketing in driving app adoption and enhancing agricultural productivity.

Downloads, ratings and reviews of output sector and Agritech sector apps

Table 5 presents insights into the downloads, ratings and user reviews of major Agri output apps, reflecting their reach and user satisfaction. Apps like KhetiGaadi (1M+ downloads) and Bijak (500k+ downloads, 4.3 rating) have gained significant traction due to their specialized services, such as machinery insights and transaction transparency. Farmizen and DeHaat Kisan (100k+ downloads, 4.0 rating) receive positive feedback for their organic produce and localized agricultural support. While NinjaCart (500k+ downloads, 3.4 rating) is appreciated for its payment system and logistics, Agri Bazaar and AgriBolo provide essential features like mandi prices, weather updates and direct market access. These insights highlight the growing

Table 4: Unique selling proposition and marketing strategies of agritech sector apps.

Agri apps	USP	Marketing strategy
Krishi network	A social platform for farmers to connect with experts and other farmers for advice on crop issues and weather.	Regional language support and farmer testimonials to build trust. Social media campaigns, especially in agricultural regions. Partnerships with agri-institutes and local farmer groups.
Plantix	AI-based app that helps diagnose crop diseases by scanning images. successful diagnosis. government schemes.	AI-driven marketing showing instant solutions to crop health issues. Focus on visual content and case studies of Collaborates with agricultural universities and
Agri app	Provides a wide range of services, including advisory, weather forecasts and market prices.	Digital marketing and partnerships with agricultural cooperatives. Focuses on localized services and regional expertise. Extensive use of SMS alerts to reach non-internet users.
Bharat agri	Personalized advisory services based on user inputs and local conditions.	Engages users through WhatsApp and SMS campaigns, alongside social media marketing focused on local farmer communities.
IFFCO kisan	Comprehensive app offering weather updates, agricultural news, market prices and advisory services.	Partnerships with farmer groups, cooperatives and government bodies. Regional language support. Aggressive outreach through agricultural fairs and rural campaigns.
Kisan konnect	Direct connection between farmers and suppliers, focusing on transparency in transactions.	Implements referral programs and partnerships with local businesses to enhance user acquisition.
Gramophone	Data-driven insights for better farm management, including crop health monitoring and advisory.	Focuses on content marketing through educational resources and engages farmers *via* social media and local workshops.
Bighaat	An e-commerce platform for farmers to buy seeds, fertilizers, pesticides and other farming inputs.	Focus on quality assurance and trust-building for e-commerce in rural areas.Partnerships with agri-input manufacturers for competitive pricing. Digital and physical marketing in farmer markets and fairs.

· Compiled from various sources.

adoption of digital solutions in agriculture, driven by reliable services and user-friendly platforms.

Table 6 provides an overview of the downloads, ratings and user reviews of leading Agritech apps, showcasing their impact on digital agriculture. Apps like Plantix (10M+ downloads, 4.1 rating) and Krishi Network (1M+ downloads, 4.5 rating) are widely used for crop diagnostics, weather updates and expert agricultural advice. AgriApp (1M+ downloads, 4.3 rating) and BigHaat (1M+ downloads, 4.4 rating) are valued for their detailed input recommendations, drone services and quality product assurance. Meanwhile, Gramophone (500k+ downloads, 4.5 rating) and BharatAgri (1M+ downloads, 4.2 rating) receive praise for their affordable input prices, expert consultations and user-friendly platforms. While IFFCO Kisan (500k+ downloads, 3.1 rating) offers precision farming solutions, Kisan Konnect (1M+ downloads, 4.1 rating) focuses on direct farm-to-consumer fresh produce delivery. These findings highlight the growing adoption of agritech solutions, driven by AI-based advisory, quality input supply and farmer-friendly services.

Reach issues faced by users in the use of agri apps

Based on the reviews posted by users on Google Play store, major reach issues were identified which are presented as below:

- Users experience performance issues, such as slow loading times, difficulties in updating profiles or app crashes.
- Product accessibility and tracking issues lead to user dissatisfaction, suggesting a need for better inventory management and timely notifications.
- The absence of multilingual support limits the app's reach in diverse linguistic regions.
- Security concerns around transaction safety and transparency hinder user trust, highlighting the need for enhanced security protocols and clearer communication.

Suggestions for development of agri apps

Following suggestions are given based on the study as below:

- It is important to ensure app stability and usability through regular updates and testing.
- Multilingual support must be provided in Agri apps to improve accessibility.
- Apps should have features for to introduce real-time tracking for streamlined logistics and order management.
- Apps should focus on strengthening customer support with in-app chat and helplines.
- Efforts should be made to use data-driven insights to prioritize improvements and address recurring issues by Agri apps.

Table 5: Downloads, ratings and reviews of output sector apps.

Apps	Downloads	Average ratings	Reviews
Agri bazaar	10k+	3.8	Good app for Agri trading, mandi prices, auction engine, weather updates.
Farmizen	100k+	4.0	Organic and high-quality products, prompt delivery.
Ninja cart	500k+	3.4	Delivery reliability, straight forward payment system.
Bijak	500k+	4.3	Transparency on each transaction for both supplier as well as buyers.
Kheti gaadi	1M+	3.9	Real on-road price of tractor, 360-degree view of tractors.
DeHaat kisan	100k+	4	Centres are near rural areas, information about plant protection and soil test can be done.
Agribolo	10k+	4.4	Gives Weather, market price, crop, latest news updates.

· Compiled from various sources.

Table 6: Downloads, ratings and reviews of agritech sector apps.

Apps	Downloads	Average ratings	Reviews
Krishi network	1M+	4.5	Details regarding weather, soil, guidelines for various crops.
Plantix	10M+	4.1	Exact analysis of crop condition, diagnose crop diseases.
Agri app	1M+	4.3	Detailed information about fertilizer, crop diseases, pesticides. Drone order feature.
IFFCO kisan	500k+	3.1	Improved and farmer-friendly UI, good precision farming services such as 'drone sprays'.
Bighaat	1M+	4.4	Good service, quality product, complete description about products, useful coupons, good crop information.
kisankonnect	1M+	4.1	Fresh fruits and vegetables of good quality, better discounts.
Bharat agri	1M+	4.2	User friendly, queries are solved by experts, easy convenient with good discounts.
Gramophone	500k+	4.5	Good farm advice and affordable prices, all type of information about agricultural inputs are available.

· Compiled from various sources, google playstore and respective apps.

CONCLUSION

Agri apps play a vital role in transforming the agriculture sector. The assessment of various agri apps highlights their crucial role in enhancing market access, providing personalized advisory services and improving supply chain efficiency for farmers. Key features such as real-time price discovery and direct-to-consumer sales help eliminate intermediaries, allowing farmers to earn higher profits and build trust through transparent transactions. The unique selling propositions (USPs) of these apps, including convenience, tailored advice and regional language support, are effectively communicated through digital marketing strategies that leverage social media, partnerships and grassroots outreach. However, challenges such as app functionality, security concerns and limited language options affect user engagement. To address these issues agri apps should integrate services like drone spraying with their digital market places, enhance user communication through personalized advisory options and create social platforms for farmer-expert connections. Improving app performance, implementing multilingual support and prioritizing security will help agri apps expand their reach and ensure competitiveness in the evolving agritech landscape.

Conflict of interest

All authors declared that there is no conflict of interest.

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