

Agribusiness Promotion through Internet-Based Technology

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Abstract— Despite being an agricultural nation, India's agricultural marketing has been inadequate. The overabundance of intermediaries and their exploitation of farmers is the primary flaw in Indian agricultural marketing. These middlemen take advantage of the farmers by paying less for the produce, and they also take advantage of the buyers by pressuring them to pay more. Many commission agents, brokers, and the like have only one goal in mind: to increase their revenue through intermediary operations. These intermediaries unfairly profit from the impoverished farmer by using their financial resources against them. The goal of this initiative is to use online markets and innovative ways to guarantee fair prices to the agricultural community. A programme provides a path of transporting agricultural goods straight from farmers to customers or shops. This programme gives farmers, customers, and merchants the ability to purchase and sell necessary farm goods at a profit at the appropriate price without the need for an intermediary. As a result, it offers access and price freedom. We can guarantee that farmers will make more favourable selling selections.

Index Terms— Web application, Agricultural marketing, producer, consumer, farmer community.

I. INTRODUCTION

The world used to depend on agriculture in the past, but today the globe depends on agriculture [1]. Farmers must have rapid and easy access to complete, accurate, and current market information for their crops [2]. Since agricultural marketing is the cornerstone upon which agriculture is based—the farmer aims to market his crop and get it to the consumer—it is significant to the country's economy. People have started to become weary of agriculture, forgetting that it is what keeps us alive. The goal of this initiative is to employ internet marketing and innovative ways to guarantee fair prices to the agricultural community. This application acts as a conduit for the direct delivery of agricultural goods from farmers to customers or retailers. This website, agricultural in arms gives farmers and customers the ability to purchase and sell necessary agricultural products at the appropriate, profitable price without the need for an intermediary. This will allow us to guarantee that farmers are making more favorable selling selections. In order for the farming community to take advantage of the increased chances for access to global markets, the nation's domestic agricultural marketing system must also be developed and brought together.

Specifically, the market system needs to be reinforced to: a) Provide farmers incentives to increase their output. b) Communicate to manufacturers the evolving needs of their customers and facilitate production scheduling. c) Encourage genuine rivalry between the market participants. d) To increase farmers' eventual share of the price they receive for their produce. Farmers invest a great deal of blood and sweat into their work, from planting seeds to harvesting finished goods. It goes without saying that they will want fair compensation for their labors. However, not all customers purchase farm products at the wholesale price. After passing through three or four intermediaries, they nearly treble the real cost before reaching the buyer. The farmers are in the same boat. They don't acquire manure or pesticides at the correct price or quality if they have to purchase them. The corruption of farm products has been going on for a while; it is not a novel development. Direct interaction and communication between farmers and consumers are necessary to prevent this [3]. Farmers are beginning to see the value of technology and smart phones as a result of the globe becoming more technologically advanced and sophisticated, especially in rural places where people now own smartphones [4]. This issue can be resolved with a mobile and web application [5]. The following are prerequisites for functionality: Product information from farmers and consumers, Expert analysis, estimate of costs, and quality control. The objectives of proposed work is to ensure fair price to the farm products and get the details of the products from farmers/consumers Also it is used to analyze the products obtained, considering the various criteria of examination required for it, to meet the quality expectation of customer and to get the right value of the verified product and uploading it in the application.

II. LITERATURE SURVEY

The main purpose of software applications is to support farmers' sustainable development. Farmers frequently struggle to decide which fertilizer, insecticide, and when to carry out specific farming tasks. Thus, this program is quite helpful in avoiding this issue. All crop types have the ability to register their fertilizer schedules. Farmers will receive weather notifications if a particular crop exceeds its ideal temperature range, as well as reminders about when to apply pesticides for diseases, fertilizer, and herbicides based on the date of the crop's seeding. Crop suggestions are supported by the kind of soil and the region [6]. In order to gain greater benefit, farmers will receive real-time national crop rates. This technology integrates GPS with stylish net and mobile communication systems for cost-effective and fashionable farming. The introduction, DBMS theories and analyses, and smartphone use in agriculture are presented in this review study. This essay was created after a quick analysis of several issues that farmers nationwide frequently confront [7]. It discusses the Android application AgriCom. This app promotes the usage of Android smartphones, which were not previously employed in the agricultural industry. This application has been helpful in giving farmers advice on crops, growing techniques, the need for fertilizers, Agriculture Marketing Using Web-based Technology, etc. Inadvertently, this boosts agricultural output, which boosts India's GDP and reduces poverty. It also discusses the most recent techniques that farmers can use to increase their yield [8]. A novel strategy for boosting farmer profitability by direct communication between farmers and dealers, customers, and other farmers presented [9]. Through this project, farmers may sell their goods online for the best price. This website is used by farmers, customers, dealers, and administrators. Farmers will be paid online, have access to a special market interface, be able to see market pricing, interact via email or SMS, and learn about other plans. Farmers can access interactive market and commodity reports using it. Another scheme [10] proposed that farmers may sell directly to customers through software. Both farmers and users gain from the mobile app. According to the technology, selling goods will be simpler. Depending on the position of the farmer, a user may navigate to them. Farmers will find the app useful. Every item uploaded by farmers is visible to the user. The consumer can click to visit the farmer's location and buy the produce. This program enables users to make purchases. Authors propose that the web is fundamentally changing, and will continue to change, marketing thought and practice. The authors [11] demonstrated the approach that will be used in an auction, wherein all wholesalers and merchants will bid starting at a predetermined minimum value for the commodity that a particular farmer advertises on the internet. The highest bidder or wholesaler will purchase the items. Following the auction, the farmer and the merchant will receive a confirmation email with their individual contact details. After exchanging contact details, the farmer and the merchant/wholesaler will discuss the logistics of delivering the goods. According to the article, there could not be much of a difference between today's markets and the web-based markets of the future. In the framework of marketing theory and practice, talk about the rise of reverse marketing, customer-centric marketing, effective-efficiency, adaptability, expectation management, marketing process focus, and fixed cost marketing. We also talk about consumer habits like temporal shifts, infomediary use, co-creation, universal availability, open pricing, and a transition from bricks to clicks [12]. The author proposed the developed Farm manager app, which offers small farm management services and was created with Greek

farmers' needs and characteristics in mind. Database storing, farm modification, simple field administration, land field data, simple task recording, personnel, and equipment are all possible with it [13]. Agro mobile application Created specifically to support Indian farmers with their agricultural demands. It uses a basic mobile phone with a camera for illness detection and identification of botanical species [14]. The Krishi Ville App manages weather prediction updates, agricultural news updates, and updates for various agricultural commodities. Indian farming has been taken into mind when designing the application [15]. The Agriculture Supply Chain Management program offers a comprehensive set of features for farmers wishing to cultivate sugarcane and achieve high yields through appropriate management [16]. E-consent utilized to find leaf diseases. Further gives farmers access to an online marketplace, a market rate guide, a weather report, and soil information [17]. Maha-Farm provides information on agro-based crops, weather, daily market prices, and news and loan information to assist farmers in their farming endeavors [18]. With a moderate level of website usage expertise, farmers will find that eAgro crop advertising is a more effective means of selling their goods domestically. The farmers would receive information from this regarding the current market prices for agricultural items, their sales history, and the profits they made from a sale. This website will also assist farmers in seeing government-provided agricultural schemes and learning about market information [19]. By learning the basics of using the internet, farmers will be able to market their goods across the nation through e-farming. The website will provide farmers with comprehensive guidance covering various aspects such as the current market rates of various products, total sales and profit earned from those sales, access to e-learning for learning new farming techniques, and a centralized way to view various government agriculture schemes, including farming compensation schemes. The SMS feature that the system offers might make it feasible to obtain the necessary information about markets and various products [20].

III. METHODOLOGY

For the average person, the creation of this app will be a highly fruitful source. The ultimate goal of creating this as a sustainable model is to eliminate the disruption and challenges that intermediaries pose to farmers. In essence, this model is made up of the following modules:

Login module: Using their login ID and password, customers, sellers, and system administrators can access this module and log in to the system. Upon login, the system opens the main account page.

Customer module: By providing their profile information, customers can register on the website. Customers can submit purchase requests to purchase farm produce that farmers have posted. The consumer has the option to accept or reject their request for purchase following the quality test and pricing quotation.

Seller module: Where they can sell their products online are the farmers themselves. The website's home page will feature farm-produced goods according to the system. *Article module:* The administrator can upload blogs and news to the article module. Farmers can see the content by navigating the article menu using this article module.

Dashboard module: The admin dashboard module is used. The admin has full control over the website settings via the dashboard module.

Location module: This is the page where admin can add country, state, city.

Product module: In this module farmer can send their products directly.

Billing module: Billing is generated by the system upon the purchase of the item. The entire cost is automatically calculated by the system. The billing report includes information on the acquired product, the customer's contact details, and billing details.

The figure 1 represents the flow of admin action in web application, admin has complete authority on website. Admin should login through their login ID and password. Once they login they can publish recent news and blogs in article menu and also they can view or edit published article. Likewise, admin can view the ordered details about a product and later they can deliver the product to customer.

The figure 2 represents the flow diagram of farmer action in web application. In farmer action, initially farmers should register themselves by providing certain details. Once a farmer gets registered to this application, he/she should login through their login ID and password. Next, they can sell their product into farmer market by uploading the images of crops and its details along with the price. Later if a customer makes a purchase request farmer can decide whether to accept it or reject. If they reject, then the process will stop there itself. If they accept it, the next process of payment receiving and delivering the product occurs. Finally the farmer action will be completed. The figure 3 represents the flow diagram of customer action in web application. In customer action, initially a customer should register themselves by providing certain details. Once a customer gets registered to this application, he/she should login through their login ID and password. Next, they can view product details in farmer's market menu. If customer wants to purchase product, he/she can send purchase request and view purchase request sent by them.

Later the farmer can decide whether to accept it or reject it. If they reject, then the process will stop there itself. If they accept it, the next process of payment making takes place and they can view the delivered product and now the customer action will be completed.

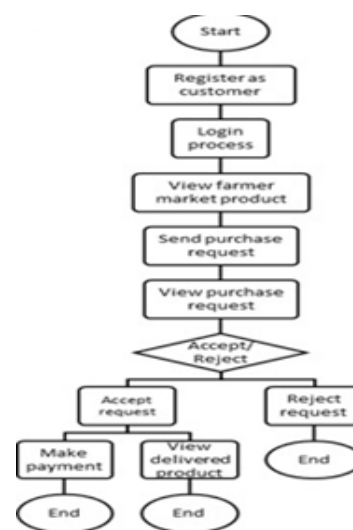


Figure1. Flow diagram of ADMIN action. Figure 2. Flow diagram of FARMER action. Figure 3. Flow diagram of CUSTOMER action.

TABLE I. PRICE VARIATIONS BETWEEN ITEMS SOLD THROUGH OUR APPLICATION AND THOSE SUPPLIED THROUGH REGULAR CHANNELS.

Sr. No.	Products Price	Actual Price for 1 kg each	Price (Using Middlemen) 1kg each	Price (Using App) 1kg each
1	Pepper	Rs.300.00	Rs.600.00	Rs.450.00
2	Areca nut	Rs.400.00	Rs.700.00	Rs.550.00
3	Paddy	Rs.30.00	Rs.45.00	Rs.35.00
4	Coconut	Rs.40.00	Rs.60.00	Rs.50.00
5	Chickpeas	Rs.30.00	Rs.60.00	Rs.40.00
6	Onion	Rs.30.00	Rs.50.00	Rs.40.00

The Table.1 provides a clear analysis that when a middleman is not involved in the transaction of one agricultural product, the buyer can get a minimum of 10% profit firmly. The figure 4 shows the flow of farm products from farmers to customers directly by undergoing some of the processes through this web application.



Figure 4. Flow of farm product process..

Database Design

In order to satisfy end users' expectations within the specific information system that the database is meant to service, database design is completed prior to construction. The necessary data and data structures that make up a database of this kind are specified in the database design. MySQL is used to physically implement the database.

Administrator, Article, Category City, Country, Customer, Produce, item, Product Purchase Bill, Products Purchase Records, Purchase Order, Order for Bill, Purchase Demand, Seller, Sales Product, State, Variety are the 19 tables that make up the database structure. Each entity's characteristics can be explained.

IV. RESULTS AND DISCUSSION

The Table 1 offers a clear explanation of how a farmer might increase profit when there is no middleman engaged in the sale of a single agricultural commodity. The same might be used if a farmer wanted to purchase something from a consumer. Initially we collected data from the farmers about the products they produce, price of that product and issues in marketing of the same. Then, collected information from the consumers about the products they require, the price they will pay for it and about the quality of the products they need. Next, the products are prepared for uploading for transaction since the correct value is projected based on its quality as assessed by the agricultural specialists. In order to facilitate the buyer's purchase, the product will be posted with a photo, complete details, and an estimated price determined by our experts and farmers. All things considered, when this application is put into use, it will meet the needs of both customers and sellers, making them both pleased. This program will be unique since it can be tailored to our local tongue in the future if necessary.

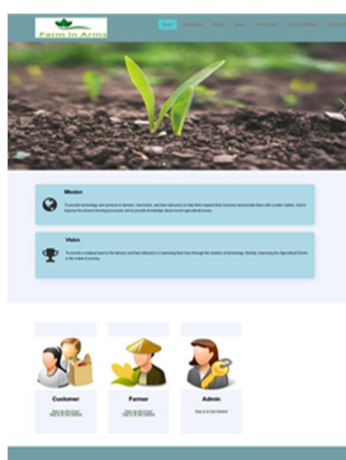


Figure 5. Home page of website Farm in Arms.

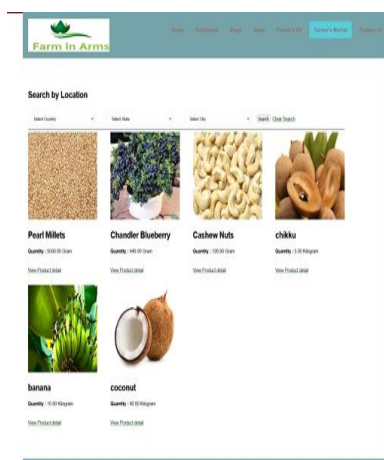


Figure 6. Farmer's Market page.

The significant communication gap has now been closed and farmers and customers can now communicate easily. There isn't any sort of intermediary involved. With the aid of our application, the products are made by farmers and sent straight to the clients' hands. When this application is used versus not used, there is a significant difference in the profit margin. Our primary goal is accomplished with this application, which is to boost farmers' profit margins and guarantee they receive fair compensation for their labor.

The figure 5 represents the homepage of our webpage where we can see different sections like Dashboard, Blogs, News, Farmer's Kit, Farmer's Market and Contact. It also shows mission and vision of this web application. A user can register or sign in to the website as customer, farmer or admin in their respective modules shown at the bottom of the webpage. The above figure 6 shows the Farmer's Market page where customer can purchase the required products

IV. CONCLUSION

The goal of every marketing campaign is to maximize profits, but it also needs to be founded on certain ideals and beliefs, like paying farmers fairly for the labor they put into their products. Agricultural marketing will be strengthened by implementing the required reforms in conjunction with appropriate price discovery through a regulated market system. Based on the review of the literature, we looked at a variety of applications that farmers have created and are using for particular purposes. Each of these apps has a distinct purpose based on its features. Numerous apps are used for various functions related to farming activities, such as information about cropping, insecticides, fertilizer, seed, crop selling, irrigation, crop production estimation, weather, and information about best practices in farming. We can ensure that it is profitable for both farmers and customers by using our online application.

Given that agriculture is still seen as the foundation of our country, it is our duty to maintain it in that form for many more generations to come and to prevent the link from breaking. Agriculture marketing can be made more successful if it is approached from a multidisciplinary and integrated perspective, engaging farmers, intermediaries, researchers, and administrators. It's about time we introduced important agriculture marketing methods using fresh and original ideas. One such tactic that will motivate farmers to carry on farming and ensure they receive the correct fruit for their labors is this application. In the future, sophisticated methods such as sensor technology may be employed to gauge the product's quality. In the future, we can create an Android application and add several languages that farmers can easily understand to this web site.

REFERENCES

- [1] M. Bhende, M. S. Avatade, S. Patil, P. Mishra, P. Prasad, and S. Shewalkar, "Digital market: E-commerce application for farmers," in 2018 fourth international conference on computing communication control and automation (ICCUBEA), 2018, pp. 1-7.
- [2] S. Chakraborty, F. J. M. Shamrat, M. S. Islam, F. Kabir, A. N. Khan, and A. Khater, "Implementing E-Commerce Academic Journal of Nawroz University (AJNU), Vol.12, No.2, 2023 61 Mobile and Web Application for Agricultural Products: eFarmers' Hut," in 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI), 2022, pp. 976- 98.
- [3] B. Vikas and S. Sebastian, "Agriculture Auction," International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), vol. 6, 2020.
- [4] V. Anbumani, V. Geetha, V. P. Kumar, D. Sabaree, and K. Sivanantham, "Development of Cloud-Based Agriculture Marketing System with Intellectual Weigh Machine," in IOP Conference Series: Materials Science and Engineering, 2021, p. 012016.
- [5] F. Shamrat, M. Asaduzzaman, P. Ghosh, M. D. Sultan, and Z. Tasnim, "A web based application for agriculture: "Smart Farming System," International Journal of Emerging Trends in Engineering Research, vol. 8, 2020.
- [6] Abishek, A. G., M. Bharathwaj, and L. Bhagyalakshmi. "Agriculture marketing using web and mobile based technologies." 2016 IEEE Technological Innovations in JCT for Agriculture and Rural Development (TIAR). IEEE, 2016.
- [7] Aradhana D, Shiva Prasad K. S., Shrivaishnavi J. K., P. Soumya, Tina Aggarwal, "Agriculture based android application." NCICT- 2016, 124-131.
- [8] Lantz, Theodoros, George Koykoyris, and Michail Salampasis. "FarmManager: an Android application for the management of small farms." *Procedia Technology* 8 (2013): 587-592.
- [9] S. Kadam, S. Gharat, A. More, and M. Desale, "ECommerce of Agricultural Field," International Journal of Research in Engineering and Science (IJRES), vol. 10, 2022
- [10] K. S. R. Krishna, J. Bhuvaneswar, T. Aravind, and P. P. Kumar, "A NOVEL APPROACH TO CONNECT DIFFERENT FOOD STAKEHOLDERS," JES, vol. 12, p. 238, 2021
- [11] B. Vikas and S. Sebastian, "Agriculture Auction," International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), vol. 6, 2020
- [12] Prasad, Shitala, Sateesh K. Peddoju, and Debashis Ghosh. "AgroMobile: a cloud based frame work for agriculturists on mobile platform. International Journal of advanced science and technology, 2013.
- [13] Singha, Manav, Kshitij Verma, and Anupam Shukla. "Krishi Ville-Android based solution for Indian agriculture." 2011Fifth IEEE international conference on advanced telecommunication systems and networks (ANTS). IEEE, 2011.
- [14] Chirmade, Monika, et al. "Agriculture Supply Chain Management Based Android Application."
- [15] Reddy, Santosh, et al. "A Survey on Crop Disease Detection and Prevention using Android Application!." International Journal of Innovative Science, Engineering & Technology, 2015.
- [16] Bhawe, Aniket, Rahul Joshi, and Ryan Fernandes. "Mahafarm : an android based solution for remunerative agriculture. "International Journal of Research in Advent Technology 2.4(2014):43- 47.
- [17] Vinodh, D., K. Nisharth, and K. Shanmugapriya. "Eagro Crop Marketing for Farming Community." International Journal in Foundations of Computer Science & Technology (IJFCST) 5.2 (2015).
- [18] Sindhu, M. R., Pabshettiwar, A., Ghumatkar, K.K., Budhehalkar, P. H., & Jaju, P. V. (2012). E- Farming. Int J Comput Sci Inform Tech, 3(2), 3479-3482.
- [19] Shabadi, Laxmi, et al. "Irrigation control system using Android and GSM for efficient use of water and power." International Journal of Advanced Research in Computer Science and Software Engineering 4.7 (2014).
- [20] K. Nagendra, N. Raghu and S. Kuldeep et al., "Innovative Techniques for a Farmer with Small Holding to become Financially Independent with Diverse Agriculture Operations and Use of Biomass", Resource Efficient Waste Management: Proceedings of 5th IconSW, 2015.
- [21] Koli, Rachana P., and V. D. Jadhav. "Agriculture decision support system as android application." International Journal of Science and Research 4.4 (2015): 903-906.