International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Mobile App for Direct Market Access for Farmers

L S Gagan, Anjan G, Soundarya S, Apeksha C, Sanjana S

School of Computer Science and Engineering, Presidency University, Bengaluru, India

ABSTRACT: Agriculture is a critical sector within the economy, yet farmers encounter various challenges in accessing markets directly, depending on intermediaries that eat into their profit margins. In order to empower farmers by giving them a platform to directly contact buyers, negotiate prices, and streamline the supply chain, the report recommends a mobile app for direct market access. The application's lean architecture, which is tailored for mobile devices, guarantees strong performance in situations with limited resources. Farmers will have more market transparency and control thanks to the suggested system's real-time listing, price negotiation, logistics tracking, and data analysis features.

KEYWORDS: Agriculture, Market Access, Supply Chain, Price Negotiation, Lightweight Architecture.

I. INTRODUCTION

The farmers have, however, a lengthy process of selling to markets directly and hence end up having middlemen who will always provide them low prices, hence less money which the farmers make. This makes it difficult for the farmers to receive good prices and their capacity to earn a good livelihood. Also, without direct market access, farmers have no option but to rely on intermediaries in order to negotiate good bargains. Their reliance not only keeps them away from financial security but also makes it difficult for them to invest in improved agriculture or diversify activities. The farm sector, a pivot of global economies and livelihoods, has not been immune to the influence of revolutionary mobile technology. Smallholder farmers, the bulk of farming households, have long been afflicted with challenges of accessing vital inputs, market information, and financial services. Yet the use of mobile applications has offered a singular chance to overcome these impediments, to facilitate greater productivity, financial access, and sustainable agricultural growth. In the last ten years, mobile apps have become a vital resource for smallholder farmers, filling the gap between conventional farming and the high-speed digital age. Through the pervasiveness of smartphones and the Internet, these apps have revolutionized how farmers obtain and share information, endowing them with unprecedented powers. Building on these findings, this paper proposes the creation of a mobile application that connects farmers directly with consumers and retailers. The app will feature produce listing and price negotiation features, thus less dependence on middlemen. By creating an easy-to-use platform where farmers can exhibit their produce and link up directly with customers, the solution is set to improve farmers' earnings potential and increase a more sustainable agricultural economy.

II. RELATED WORK

Gauravjeet Dagar in his study stated that the fundamental motivation behind promoting data framework Marketing Information System (MIS) is to support farmer to understand the different marketing strategy which advertising basic leadership and showcasing endeavors of business people and agriculturists. The Author said efficient information about the real market prices should know by the farmer and if it would be available in a single platform then the farmer will get the benefit. In any case, the data is additionally helpful for different sorts of associations, for example, government, advancement associations, academicians, and scientists. The accessibility of auspicious and exact data to every single invested individual is on sequent fundamental, regardless of whether it be given by the administration itself or by the private part. This paper investigates the different sorts of farming advertising data frameworks pre-dominant and endeavors to give a wide point of view on promoting data framework. Utilizing an illustrative approach, it endeavors to portray applicable horticulture advertising data frameworks, and examine them to create thoughts and bits of knowledge which might be valuable for creating and fortifying MIS in agribusiness segment [1].
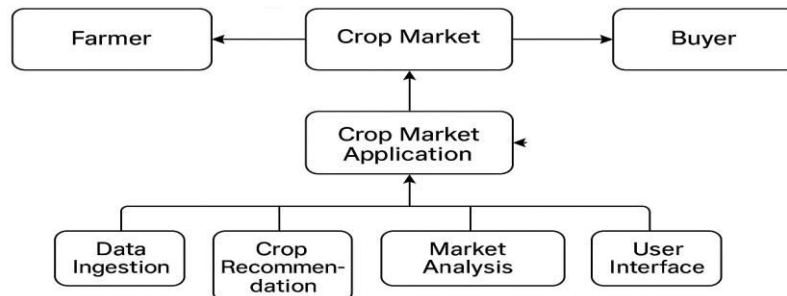
Fig. 1. System Architecture

More recently, a smartphone and web application for optimal crop watering based on a wireless sensor network was suggested by the authors in [2]. Other smartphone based solutions include measuring plant growth characteristics in controlled environments [3], using smartphones as portable reflectometers to analyze soil nutrients from 92 samples across Indonesia [4], and providing an intuitive tool for farmers to quickly comprehend current and emerg ing drought and irrigation risks to aid decision-making [5]. Additionally, recent advances in machine learning and smartphone technology have enabled the integration of convolutional neural networks (CNN) into smartphones for real-time classification of leaf diseases [6], [7] assisting farmers in monitoring crop health. The impact of ICTs on farmers' economic well-being through smartphone use has been explored in countries like China and India [8], [9]. However, there is limited research on similar experiences in South American countries, such as Colombia. The data correspondence innovations are expanding in creating nations for the advancement of various individuals, for example, educationist, specialists, and agriculturist. The ranchers are one of the huge groups in creating nations where they have not offices in their general vicinity for increment their item and pay. The cell phone is expanding among agriculturists yet at the same time, there is whole accessible among business, clients, and ranchers. There is a need to upgrade diverse task about cell phone advancements where agriculturists could get simple access to speak with individuals to offer their products in the showcase. The administration and other related division ought to likewise plan to achieve these ranchers and give the most recent data about seed, climate, and market on the time and give a great cost of their item [10].
Existing System

Deals are done manually with basically no common platform and less connectivity between the farmers and the food processing industry the current systems deprives farmers of being the principal decision maker. The Food processing industry employs people (middlemen) who search for the raw material needed. This Process needs a lot of manpower and time; this can lead to human-induced errors. Digital Involvement is very less in the traditional system.

III. PROPOSED METHODOLGY

The proposed mobile application for Direct Market Access for Farmers aims to enable farmers through the provision of a system that enables real-time listing of produce, price negotiation, logistic tracking, and market analytics. The system architecture is modular with three principal subsystems: a farmer's interface to list produce and prices, a buyer's interface to view and purchase, and an admin's interface for user authentication and the administration of the platform. The fundamental feature of the app starts from the live listing of fruits and vegetables, wherein farmers can input product information, images, and initial prices, which get uploaded to consumers in real time and increase market transparency. The negotiation price module is one of the core features, wherein consumers and farmers receive the option to communicate with one another directly through an in-app chat module. The module avoids the middleman, hence realizing fairer trade practices and improved negotiating power for farmers. Upon establishment of a agreement, the logistics tracking module allows for transportation coordination by connecting farmers with local logistics

operators. Monitoring in real-time provides transparency and minimizes post-harvest loss, thereby enabling effective supply chain management. The app also has market information and analysis that aid farmers in decision-making. From past patterns of prices, demand, and consumer choice, the app offers customized suggestions, helping farmers to maximize market strategy and price. Information encryption is used for security and reliability reasons to protect transactions and user data. Lightweight architecture ensures that bandwidth is not utilized, so the application is accessible even where internet connectivity is poor.

IV. SIMULATION RESULTS

The mobile app offers a number of user-focused features that help farmers achieve direct market access. One section of the interface enables farmers to advertise their available crops with additional information such as type, quantity, and desirable price. Another section promotes real-time negotiation between buyers and farmers using an in-built chat service, which allows for improved price settlements without middlemen. Besides, the app has a tracking of logistics feature that brings farmers into contact with transport service providers and enables both to monitor delivery status. To further augment the process of decision-making, the app has a market analytics dashboard that gives insights based on historical price actions, tendencies of buyers, and demand patterns.
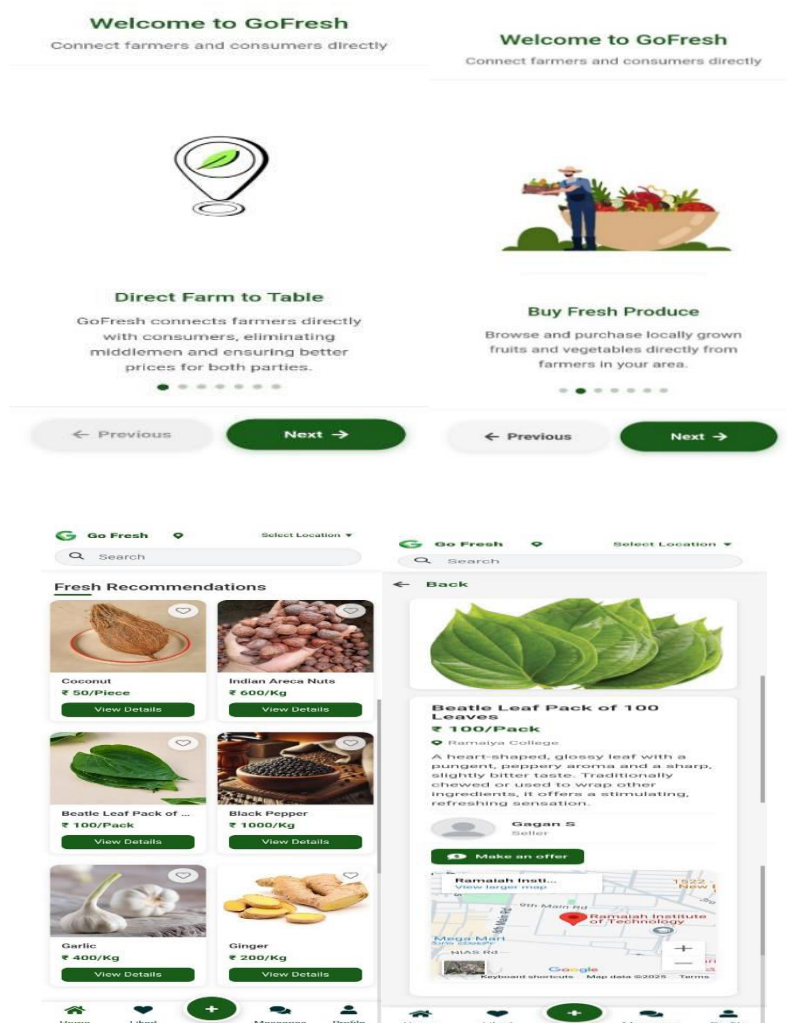
V. CONCLUSION

The proposed Mobile App for Direct Market Access for Farmers solution addresses a critical gap in the agriculture ecosystem—the lack of direct and transparent market connections between buyers and sellers. Leveraging the use of mobile technology, the platform empowers farmers to list their crops, haggle over prices, arrange logistics, and make choices on one integrated platform.

Not just does this platform enhance farmers' negotiating power and margins, but it also streamlines the agricultural value chain and makes it transparent. It reduces dependence on intermediaries, post-harvest wastage, and supports fair trade. The module-based architecture and lightweight design make it accessible even in those with limited resources. While there are challenges related to digital literacy, connectivity, and adoption, the app offers a strong platform for technology upgradation in agriculture. With future improvements like AI integration, voice support in various languages, and government scheme integrations, the platform can emerge as a one-stop digital solution for marginal and small farmers.

Ultimately, this action helps to promote the greater goal of agricultural sustainability and economic growth by placing market control in the hands of those who grow our food—the farmers.

REFERENCES

1. G. Dagar., "Study of Agriculture Marketing Information System Models and Their Implications," AIMA Journal of Management & Research,, vol. 9, no. 2/4, may 2015.
2. J. Muangprathu, N. Boonnam, S. K. jornkasirat, N. Lekbangpong, A. W. bat and a. P. Nillaor., "Iot and agriculture data analysis," Computers and electronics in agriculture, vol. 156, pp. 467-474, 2019.
3. ChengLi, R. Adhikari, Y. Yao, A. GMiller, K. Kalbaugh, D. Li and a. K. Nemali., "measuring plant growth characteristics using smartphone based image analysis technique in controlled environment agriculture," Computers and Electronics in Agriculture, vol. 168, 2020.
4. K. Golicz, S. Hallett, R. Sakrabani and a. J. Ghosh, " Adapting smartphone app used in water testing, for soil nutrient analysis," Computers and Electronics in Agriculture, vol. 175, p. 105532, 2020.
5. D. Haro-Monteagudo, J. W. Knox and a. I. P. Holman., "A decision-support webtool for improving drought risk management in irrigated agriculture," Computers and Electronics in Agriculture, vol. 162, pp. 855–858,, 2019.
6. U. Barman, R. D. Choudhury, D. Sahu and a. G. G. Barman, "Comparison of convolution neural networks for smartphone image based real time classification of citrus leaf disease.," Computers and Electronics in Agriculture, vol. 177, p. 105661, 2020.
7. Y. H. Yonis Gulzar, A. B. Soomro, A. A. Alwan and a. L. Journaux., " A convolution neural network-based seed classification system," Symmetry, vol. 12, no. 12, p. 2018, 2020.
8. S. Min, M. Liu and a. J. Huang., "Does the application of icts facilitate rural economic transformation in china? empirical evidence from the use of smartphones among farmers.," Journal of Asian Economics, vol. 70, p. 101219, 2020.
9. Thirunagalingam, A. (2024). Transforming Real-Time Data Processing: The Impact of AutoML on Dynamic Data Pipelines. Available at SSRN 5047601.
10. C. Parker, K. Ramdas and a. N. Savva., " Is it enough? evidence from a natural experiment in india's agriculture markets," Management Science, vol. 62, no. 9, p. 2481–2503, 2016.
11. S. Mittal and G. Tripati., "Role of Mobile Phone Technology in Improving Small Farm Productivity," Agricultural Economics Research Review, pp. 451-459, 22.

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Scan to save the contact details