Int. J. Sci. R. Tech., 2026 3(1)
A Multidisciplinary peer-reviewed Journal
www.ijsrtjournal.com [ISSN: 2394-7063]

Original Article

Mobile App to Manage Food Distribution to Needy People

Dr. R. N. Kulkarni, Pavithra S. Ganapa*, Pradivya G., Sindhu K.

Department of Computer Science and Engineering, Ballari Institute of Technology and Management, Ballari, Karnataka, India

ABSTRACT

Mobile App to Manage Food Distribution to Needy People aims to develop a mobile application that facilities the efficient distribution of surplus food to people in need, addressing both food waste and hunger. Every day, large quantities of edible food are discarded by households, restaurants, and business, while many individuals and families struggle to access nutritious meals. The primary objective of Mobile App to Manage Food Distribution to Needy People is to create a user-friendly, community-driven platform that connects food donors with volunteers and recipients in real time. The mobile app will allow donors to post available surplus food, enable volunteers to coordinate pickups and deliveries, and help recipients locate and receive food with ease. Key features will include real-time tracking, donation history, user verification, and automated notifications, ensuring safe, timely, transparent distribution. By using technology to streamline the process, it not only seeks to reduce food waste but also to build a network of support that empowers communities and promotes food equality. The expected outcome is a scalable, sustainable solution that can be expanded to serve multiple regions, ultimately to the global fight against hunger and supporting environmental sustainability.

Keywords: Mobile Application, Food Distribution, Surplus Food Management, Food Waste Reduction, Community Support System

INTRODUCTION

Food waste is a significant challenge worldwide, with millions of tons of edible food discarded annually despite widespread hunger and malnutrition. This not only leads to environmental harm through wasted Resources but also represented a missed opportunity to support vulnerable populations. The mobile App to Manage Food Distribution to Needy People addresses this pressing issue by creating a digital platform that connects food donors- such as restaurants, grocery stores, event organizers, and house holds- with volunteers and individuals or organization in need. By enabling real-time communication and coordination, the app makes sure that surplus food is collected quickly and delivered safely to those facing insecurity. This method helps cut down on the environmental effects of food waste and promotes social equity by improving access to nutritious meals. The app's user-friendly design will make it accessible to a wide range of users, encouraging community participation and fostering collaboration among donors, volunteers, and beneficiaries. This project is really focused on being able to grow and reach people in different areas and communities. It has things like tracking with GPS, scheduling donations. Sending out notifications. These features will make the process of getting food to people a lot easier and more open. This will help make food systems better and communities healthier by using food to make a difference. This project is, about food. It is trying to make food systems better. Food is a part of the project and it wants to help people get the food they need.

LITERATURE SURVEY

The paper [1] describes a cloud-enabled mobile platform designed to redistribute surplus corporate meal boxes to nearby beneficiaries using location-based matching and real-time status tracking. Their model emphasizes low-cost deployment using scalable cloud infrastructure, user role segregation, and secure authentication to ensure reliable donor-NGO coordination. The system includes automated alerts, digital proof-of-delivery, and inventory visibility, illustrating how structured workflows can significantly reduce food waste while ensuring

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

accountability in high-volume corporate settings. The paper [2] presents Food-For-All, a donation-management web application that streamlines the interaction between donors and NGOs by providing clear workflows for listing surplus food, accepting request, and managing donation history. Their study focuses on usability and operational transparency, showing how an organized digital interface increases donation frequency and reduces communication delays common in manual donation systems. The paper [3] describes a systematic review of AI-driven food-ordering applications, demonstrating how machine learning improves personalization, recommendations, and customer satisfaction. Although centered on commercial ordering apps, the findings highlights the potential of AI-driven decision systems in food redistribution-especially in predicting demand, optimizing rotes, and understanding user engagement for donation platforms. The paper [4] describes Food Share, a structured web-based platform enabling surplus-food donors to register, upload details, and match with NGOs on a first-claim basis. Their system prioritizes transparency, easy navigation, and reliable record-keeping, offering a practical blueprint for designing donation portals that support multi-role access and audit-friendly data storage. The paper [5] describes a machine-learning-enabled food distribution model that forecasts donation demand, predicts consumption pattern, and automates the allocation of surplus food to NGOs. Their work focuses on reducing inefficiencies caused by manual decision-making, showing that predictive analytics can significantly improve utilization rates and minimize waste in community-based donation Systems. The paper [6] developed am integrated frame work combining restaurant food demand forecasting, surplus tracking, and global food waste analytics with donation logistics increases operational efficiency, producing a system that supports informed decision-making and reduces spoilage at multiple stages of the food chain. The paper [7] describes outline Share and Care, a mobile application with door, Ngo and admin dashboards designed for seamless food donation management. Their design emphasizes usability, role-based access, and simplified workflows-features that improve public engagement and facilitates smoother coordination between community donors and NGOs. The paper [8] describes Share Plate, a Firebase-Powered mobile app that uses real-time data syncing, image uploads, and OTP-based authentication to help donors list surplus meals and track acceptance by NGOs. Their system highlights reliability, cloud-backend storage, and smooth notification flows, presenting a robust model for mobile donation management. The paper [9] describes Aahar, an Android-base food donation app featuring real-time location mapping, OTP-verification and cloud storage for donor listings. Their study focuses on accessibility and low-bandwidth performance, making the solution well-suited for developing regions where technical constraints often hinder digital donation systems. The paper [10] describes consumer behavior toward food delivery apps, identifying key drivers of engagement such as convenience, trust, speed, and interface experience. Although not a donation system, their insights help designers of donation apps understand user expectation and build features that increase adoption and sustained participation. The paper [11] describes a blockchain-enabled food donation platform employing smart contracts to ensure secure, transparent, and tamper-proof donation records. Their system reduces fraud, enhances trust among stakeholders, and enables automated triggers for donation confirmation-features highly relevant to large-scale food redistribution. The paper [12] describes FEEDTE, a simple yet functional food donation application focusing on fast listing, donor-NGO matching, and donor verification. The study emphasizes user –friendly UI and real-time status updates, making the platform accessible for both individual and organizations participating in donation efforts. The paper [13] describes a mobile app with secure authentication, image-based listings, and live donation tracking. Their system focuses on efficiency and transparency by enabling NGOs to quickly review available donations and confirm pickups with time-stamped digital records. The paper [14] describes a Flutter-based cross-platform application featuring comprehensive modules for donors, NGOs, and administrators. Their implementation highlights real-time dashboards, Google Maps integration, and automated OTP verification, offering one of the most complete end-to-end donation workflows among the reviewed systems. The paper [15] describes an Android-based food donation app that enables donors to upload surplus food details and recipients to quickly locate nearby donations through GPS. With

Firebase authentication and real-time notifications, the system simplifies communication and ensures timely pickups, making the redistribution of leftover food more efficient and organized. The paper [16] describes an Android application that leverages Firebase Real-time Database to connect donors with informers through hunger-spot mappimg and live donor-listing updates. Their low-cost approach makes the system suitable for large-scale adoption, especially in urban areas with significant leftover food generation. The paper [17] describes a mathematical optimization framework addressing uncertainties in food supply and demand during crises such as COVID-19. The model demonstrates how robust optimization can improve allocation reliability, making it a valuable contribute to policy-level planning for food relief operations. The paper [18] describes a game-theoretic model that incentivizes volunteers and optimizes distribution routes for surplus food in smart cities. Their work emphasizes fairness, strategic stability, and improved resource allocation-offering theoretical tools that can improve real-world donation logistics. The paper [19] describes a mobile system enhancing access to edible surplus food through user-friendly interfaces, integrated location services, and evaluations that show increased distribution efficiency and user engagement. Their study demonstrates practical success in connecting food donors with nearby recipients. The paper [20] describes a FOODIE FRAN, a hybrid Android-SQLite donation system incorporating TensorFlow Lite image classification to validate food quality before distribution. Their integration of on-device AI ensures that only safe, non-spoiled food is donated, making this system one of the most advanced in quality assurance within the donation ecosystem.

PROPOSED METHODOLGY

In this system, the process begins when a donor has extra food. When the donor has surplus food, they open the application and donate it by entering details like the type of food, quantity, and pickup location. After the food is donated, the NGO checks the details. They process the donation and decide where the food should go. Based on the needs of the beneficiaries, the NGO assigns a delivery address. Once the NGO assigns the delivery address, the admin reviews the request. The admin then assigns the food delivery task to a delivery person who has logged into the system. The delivery person receives the task, goes to the donor's location to pick up the food, and delivers it to the address provided by the NGO. After completing the delivery, the delivery person updates the delivery status in the system. This keeps all users—donors, NGOs, and admins—informed that the food has been delivered successfully.

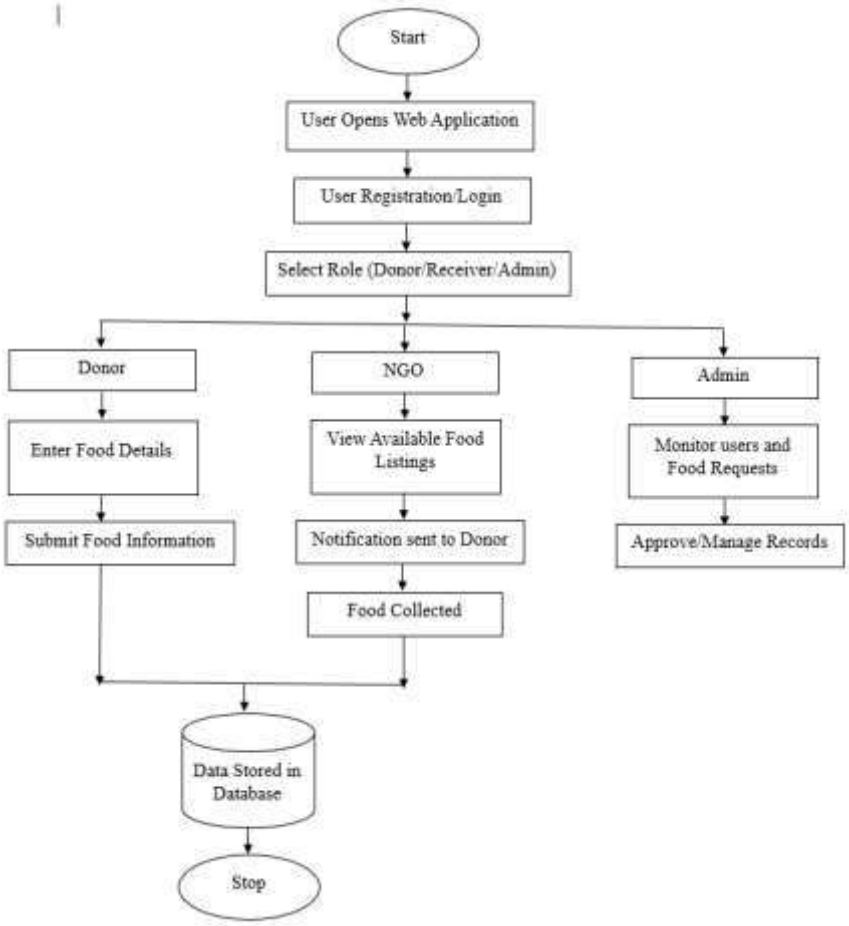

Fig 3.1 Illustration of Mobile App to Manage Food Distribution to the Needy People

RESULTS AND DISCUSSION

The proposed food donation system was implemented successfully, and its performance was evaluated based on usability, accuracy, and workflow efficiency. The first result observed was that the user authentication module worked smoothly, allowing donors, receivers, and volunteers to log in and register without issues. The interface was simple and responsive, making it easy for users to start using the platform.

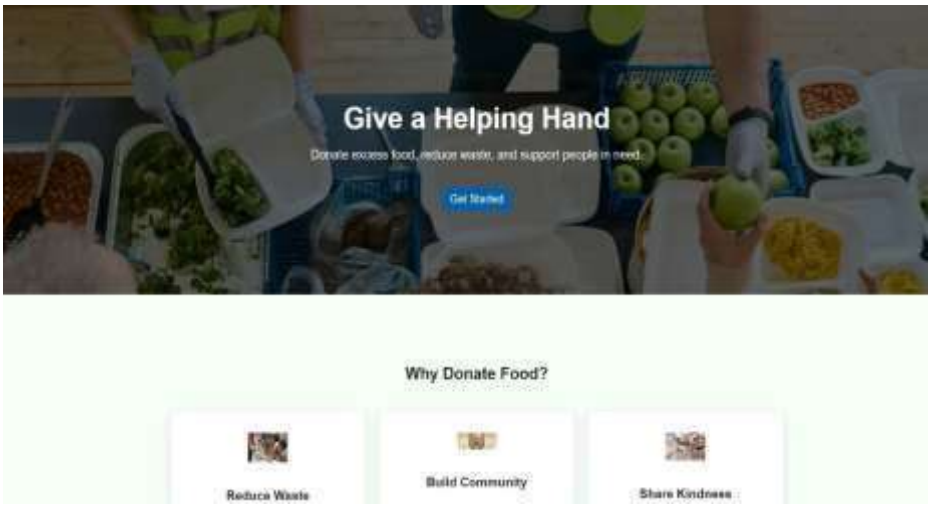

Fig 4.1 Home Page

Once users logged in, the donor module allowed food providers to upload details such as type, quantity, freshness, and images. The system validated the information and stored it correctly in the backend. This ensured that all donation entries were complete and accurate before being listed for receivers.

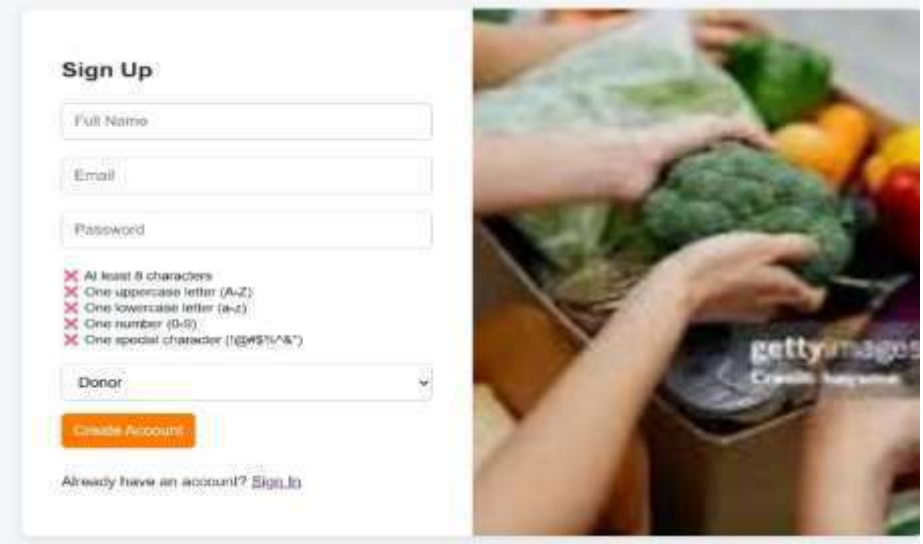

Fig 4.2 Sign Up Page

The donation list page displayed available food items clearly, enabling NGOs and receivers to request items easily. The design and navigation were user-friendly, improving the overall experience during testing.

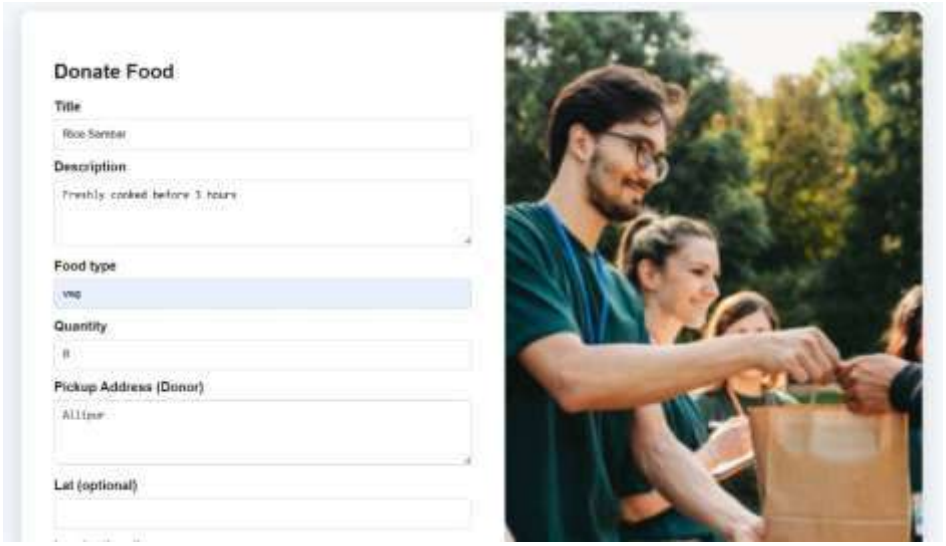

Fig 4.3 Food Donation Page

The system chooses a volunteer based on availability and distance each time a recipient asked for a donation. According to test results volunteers could see their tasks right away and the assignment was completed quickly. dash screen. During pickup volunteers used the system to perform food quality verification. Freshness level packaging condition and safety were all successfully recorded by the app according to the recorded data. examines. This guaranteed that beneficiaries received only safe food.

Fig 4.4 NGO's Dashboard

The live tracking feature which allowed donors and recipients to keep an eye on things was one of the most significant outcomes. volunteer transportation between pickup and delivery. There were no problems with the map integration which improved stakeholder trust and transparency.

Fig 4.5 Admin Dashboard

Fig 4.6 Donation History

Volunteers used the system to verify the foods quality during pickup. Freshness level packaging condition and safety were all successfully recorded by the app according to the recorded data. verifies. This guaranteed that recipients would only receive food that was safe. All user information donations delivery records and feedback were efficiently stored in the backend database. The system demonstrated its stability during testing by handling numerous entries without experiencing any performance problems. architectural design. All things considered the findings verify that the system operates dependably and satisfies the functional specifications. The app guarantees minimize manual labor and improves coordination between donors volunteers and NGOs. organized distribution of food. The discussion shows that features like intelligent matching, real-time tracking, and quality checks significantly improve the efficiency of the donation process.

CONCLUSION

The developed food donation system provides an efficient and reliable platform for connecting donors, volunteers, and receivers to reduce food wastage and promote responsible distribution. By integrating features such as user authentication, donation listing, intelligent matching, real-time volunteer tracking, and food quality verification, the system ensures transparency, safety, and smooth coordination throughout the donation process. The results demonstrate that the application successfully streamlines each stage—from donation entry to delivery—while improving user engagement and reducing manual effort for NGOs and volunteers. The

backend database and optimized architecture maintain stable performance even with multiple users, proving the system's scalability and practicality. Overall, this project shows that technology-driven solutions can significantly support social welfare initiatives by enabling faster, safer, and more organized food redistribution within communities.

REFERENCE

1. Mohod, P. T., Otuka, R. I., Ajienka, N., Ihianle, I. K., Nwajana, A. O., "A Mobile Application to Facilitate Meal Box Sharing in Corporate Environments Using Cloud Infrastructure," Electronics, ISSN 2079-9292, Vol. 13, Issue 4631, 24 November 2024, pp. 1-13.
2. Chandula, Y., Kavinda, A., Shaminda, T., Gunaratne, S., De Silva, D. I., Cooray, D., "Food-For-All Web Application for Donation Management," International Journal of Engineering and Management Research, ISSN: 2250-0758 (e), 239416962 (p), Vol. 12, Issue 5, October 2022, pp. 90-98.
3. Shorbaji, M. F., Alalwan, A. A., Algharabat, R., "Al-Enabled Mobile Food-Ordering Apps and Customer Experience: A Systematic Review and Future Research Agenda," Journal of Theoretical and Applied Electronic Commerce Research ISSN 0718-1876, Vol. 20, Issue 156, 1 July 2025, pp. 1-25.
4. George, E. J., Khan, A. R., Maimoona, K., Shabeeb P. T., Reshma, M., "Food Share: A Collaborative Platform for Food Donation and Distribution," International Journal of Research in Engineering and Science (IJRES), ISSN: 2320-9364 (Online), 2320-9356 (Print), Vol. 12, Issue 4, April 2024, pp. 317-326.
5. Akila, K., Mukherjee, S., Joshi, V., Satyadev, N., "Smart Food Distribution System: An Effective Solution to Reduce Food Loss," International Journal of Creative Research Thoughts (IJCRT), ISSN: 2320-2882, Vol. 13, Issue 4, April 2025, pp. 118-132.
6. Kruthika, V., Lavanya, H. R., Mahalakshmi, E. H., Ranju, P. S. R., Priyanka, H. L, Sindhu, K. S. "Integrated Approach for Food Donation System, Restaurant Food Demanding Forecasting Using Machine Learning, and Global Food Waste Analysis," International Research Journal of Modernization in Engineering, Technology and Science, ISSN: 2582-5208, Vol. 5, Issue 7, July 2023, pp. 11-18.
7. Lakshmi, V. S. S., Surekha, M. N. V., Sanjana, P. S., Durga, R. J. S., Sai, M. C. S., "Share and Care: A Food Donation Web Application," International Journal of Innovative Science and Research Technology (IJISRT), ISSN: 2456-2165, Vol. 9, Issue 2, February 2024, pp. 74-82.
8. Ponnimalar, R., Parthasarathi, S., Pranav, K. S., Sabitha, S., "Development of a Mobile Application for Food Donation and Distribution: The 'SharePlate' Project," International Journal of Scientific Development and Research (IJSDR), ISSN: 2455-2631, Vol. 10, Issue 3, March 2025, pp. 290-295.
9. Mathur, M., Srivastava, I., Rai, V., Kalidass, S., "Aahar - Food Donation App," International Journal of Scientific Research & Engineering Trends (USRET), ISSN: 2395-566X, Vol. 7, Issue 3, May-June 2021, pp. 1256-1260.
10. Jadhav, S., Titus, R., Babu, T., Chinnaiyan, R., "Evaluation of Consumer Behavior Regarding Food Delivery Applications in India," International Conference Paper /Academic Research Paper (Alliance University), (No ISSN mentioned in document), 2023, pp. 1-10.
11. Talukder, A. A. T., Mahmud, M. A. I., Sultana, A., Pranto, T. H, Haque, A. B., Rahman, R. M., "A Customer Satisfaction Centric Food Delivery System Based on Blockchain and Smart Contract," Journal of Information and Telecommunication, ISSN: 2475-1839, Vol. 6, Issue 09 September 2022, pp. 1-24.
12. Vaibhava P. G., Shraya R., Taanvi V., Jiddagi, R. B., "FEEDIE: Food Donation Application," International Journal of Creative Research Thoughts (JCRT), ISSN: 2320-2882, Vol. 12, Issue 5, May 2024, pp. 482-487
13. Dhangar, N. M., Dhangar, P. M., Karajkar, P. A., Dhumale, K. R., Biradar, S., "Free Food Donate Application," International Journal of Progressive Research in Engineering Management and Science (IJPREMS), ISSN: 2583-1062, Vol. 05, Issue 04, April 2025, pp.1508-1516.
14. Patil, A. D., Jadhao, S. M., Saraf, P. R., Wanjari, S. J., Kolwate, S. G., "Akshaya Patra -Food Wastage Reduction Through Donation Application," International Journal for Research

Trends and Innovation (IJRTI), ISSN: 2456-3315, Vol. 7, Issue 6, June 2022, pp.1501-1509.
15. Khandagale, A., Chitalkar, A., Jagtap, S., Bagal, V., "Food Donation Mobile Application," Journal of Emerging Technologies and Innovative Research (JETIR), ISSN: 2349-5162, Vol. 11, Issue 11, November 2024, pp. 660-662.
16. Shirsat, K., Shaikh, I., Deshmukh, P., Lambhate, M., "Food Donation Application: Food Share," International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056, p-ISSN: 2395-0072, Vol. 08, Issue 05, May 2021, pp. 1875-1877.
17. Dalal, J., "Food Donation Management Under Supply and Demand Uncertainties in COVID-19: A Robust Optimization Approach," Socio-Economic Planning Sciences, ISSN:0038-0121, Vol. 82, Issue-, 2022, pp. 101210.
18. Sanyal, S., Singh, V. K., Xhafa, F., Sanyal, B., Mukhopadhyay, S., "A Game Theoretic Framework for Surplus Food Distribution in Smart Cities and Beyond," arXiv Preprint, ISSN: 2331-8422 (arXiv), Vol. 13, Issue 23, 09 February 2021, pp. 1–32.
19. Kusumawati, Y. A., Aurellia, V., Lasmy, L., Lukiyanto, K., Awang, M. B., Han, C. S., "From Waste to Worth: Enhancing Access to Edible Surplus Food Using a Mobile App for Better Distribution," Procedia Computer Science, ISSN: 1877-0509, Vol. 269, Issue, 2025, pp. 749–761.
20. Sidapara, N. A., Yashitha, T., Vibha, M., Samyuktha, M., Jayashubha, J., "FOODIE FRAN: Excess Food Management and Donation Application," TIJER – International Research Journal, ISSN: 2349-9249, Vol. 10, Issue 12, December 2023, pp. 236–238.

HOW TO CITE: Dr. R. N. Kulkarni, Pavithra S. Ganapa*, Pradivya G., Sindhu K., Mobile App to Manage Food Distribution to Needy People, Int. J. Sci. R. Tech., 2026, 3 (1), 86-93. https://doi.org/10.5281/zenodo.18149753