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" SHAREBITE: A WEB BASED SOLUTION FOR INSTANT FOOD DONATION AND DISTRIBUTION"

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Abstract: Food bank plays a crucial role in addressing hunger and supporting needy population. This research presents the design and implementation of ShareBite, a web-based application. It acts as a bridge between surplus food sources and with those who can distribute it or need it. It has a dual feature system that provides access to both donors and receivers. This app-based application includes several key technical features that make food donation simple and fast. One of the most important parts is the location tracker. This tool calculates the exact distance and travel time between the person giving the food and the one receiving the food. There is a social impact dashboard within the app. This section visually demonstrates the positive impact that the platform provides. It demonstrates the number of meals donated and people who have been helped.. By using these real-time tools, Share Bite removes the common delays in food rescue. This project proves that using simple digital tools can help communities work together much better to fight hunger.

Keywords: Donor-Receiver Platform, Location tracker, calculates the exact distance

I. INTRODUCTION

Even with many efforts to reduce waste, a large amount of food is still lost or wasted. Various causes for food waste include: Poor storage and handling methods, no proper storage facilities, over-production, the consumer behavior, etc. Due to the reasons, huge quantities of food which is fit to eat are lost instead of consumed.

Reports state that over a billion meals a day is wasted, due to households, restaurants and shops throwing away huge quantity of food on a daily basis. At the same time over 780 million people in the world suffer from not having enough food. From the global hunger index for the year 2025-2026, we know that there is great hunger problem in India where India has been ranked 102 out of 123 countries in terms of hunger.

This food waste andhunger can be solved if the food banks were to function efficiently.Food banks are organizations that collect excess or surplus food from sources such as restaurants, hotels, households, and so forth. This excess food is then properly managed and then stored and distributed to people in need, such as low-income households, homeless people, and other hungry people who need the food. Therefore, it serves as an intermediary that bridges the gap between those who have an excess of food and those who have less.

Currently, a large number of organizations and food banks operate to redistribute unused food collected from restaurant kitchens, hotels and also households with the help of local community networks and volunteers. While these are valuable systems that help tackle the issue of food wastage, a problem occurs with their functionality since they require human intervention for all activities such as phone calls, messages or physical

co-ordination. All the stages in the system, be it notifying the volunteers, arranging for transport, or matching the correct donors to the correct receivers, is slow and confusing.

In most cases, there isn't a proper way to match the food donors and receivers and as a result, both the donors and receivers have not received information on where to contribute the food or when to receive it. Moreover, there isn't a system in place to track how much food is available and where, how fast the food should be sent before it gets wasted. Due to these reasons, some amount of food gets wasted.

All these issues make the food distribution network an inefficient and inefficient network which ultimately leads to loss of food. Therefore, there is a dire need for a new system that makes the entire network effective by implementing technology in every possible manner such as fast communication and instant notification about the quantity of food available and also on where to deliver the food.

With a view to solve the aforesaid issues, the proposed work suggests ShareBite which is a web-based application developed to manage the flow of food donations efficiently between donors and receivers with the use of real-time technology..

The web-based application provides a dual-user interface for both Donors and Receivers.

One important feature of this platform is a location-based system that helps reduce delays in delivering food, especially food that can spoil quickly. The app uses the saved location of users, like their home or office, to find the distance and travel time between the person giving the food and the person receiving it. For every food post, it shows an estimated distance and time (for example, 12 km or 30 minutes). This helps the receiver decide if they can collect the food on time before it goes bad. In this way, the system helps keep the food safe and reduces food waste. Another important feature of the application is the Social Impact Dashboard, which helps users see the results of their contributions. It shows simple information such as the total number of meals donated and the number of people helped. This allows donors to clearly understand the positive impact of their actions. It helps in promoting a sense of social responsibility among individuals and organizations. The transformation of surplus food into useful supply is carried out through a four-step automated process. It starts with the entry phase, where donors input the details of the excess food. After that, in the listing stage, the info is logged and transmitted to the registered bodies. In the logistics stage, the system will choose the pick-up technique and plan the fastest route to delivery. Finally, in the completion stage, the deal is certified and the system update all the information instantaneously, that makes all the deeds transparent and trackable. This research tries to develop an effective and technological solution to decrease food wastage and optimize food distribution. By bridging the donors and receivers more rapidly, securely and effectively, the system, ShareBite, could leverage from the tracking feature, the real-time updates and the impact assessing feature. The research shows that how some very simple digital tool can achieve a better communication and collaboration among communities to tackle the hunger and food wastage problems.

II. Incentive and goals:

Motivation

The main motivation of developing an app on the topic of food bank assistance and distribution is because of the urgent need to address, the very major issues faced by people nowadays is food wastage and hunger. this imbalance is created because a huge amount of food from restaurants, weddings, and households is being wasted on a daily basis. At the same time, needy and homeless people, suffer and die from hunger, as they can't even afford even a single meal per day. these two problems arise because of improper communication, coordination and lack of proper distribution and management.

Another most important reason is that most of the food banks function improperly, and management is slow and unorganised, and hence, this results in wastage and spoilage of food. This all occurs because, there is lack of transparency making it harder to track donations and ensuring that resources are being used effectively.

Due to the increased use of internet and smartphones, it has given us a great opportunity to use these features and technology and solve the problem. this mobile application acts as a bridge between donors and recipients making the process faster more and accessible.

Objectives

The main objective of this research is to design a mobile application that improves connection between the donors and the receiver thereby reducing food waste and providing a platform where donors can easily share excess food with people in need.

Second important objective is to a create a user-friendly interface that helps users to register, select their role and make donations or receive food without any difficulty. This system also aims to connect multiple

stakeholders, including donors, needy individuals and NGOs on a single platform and ensure smooth working of the system.

Thirdly, this app focuses on providing proper information to the users about the through notifications. It also includes verification process handled by NGOs to ensure that food is distributed fairly and reaches the right people.

Overall, the objective is to build an easy to access and transparent system that uses technology to solve a real-life problem and save economy for wastage and helping needy from hunger.

III. Related Work:

Sr. No.	Author(s)	Year	Title of Paper	Method / Technology Used	Key Findings	Limitations
1	• Nasibeh Zohrabi • John C. Jones • Brittany Keegan • Sarin Adhikari • Brian C. Verrelli • Sherif Abdelwahed	2025	Addressing Urban Food Insecurity Through Data-Driven and Community-Centric Smart City Frameworks.	**Tools Used:** HTML, CSS, JavaScript, backend programming language, and MySQL database.	Data-driven systems improve food distribution and accessibility.	No real-time tracking, limited mobile app implementation, no donor-receiver matching.
2	• Ebin J George • Ahemmed Ramees Khan • Maimoona K • Muhammed Shabeeb P T • Reshma M	2024	FoodShare: A Collaborative Platform for Food Donation and Distribution.	Problem Identification, System Design, Application Development, Database Integration, System Testing **Tools:** 1. Flutter 2. Dart 3. XAMPP Server 4. MySQL Database	Digital platform improves coordination and reduces food waste.	Limited geographic scope, no food quality monitoring, dependency on users.

Sr. No.	Author(s)	Year	Title of Paper	Method / Technology Used	Key Findings	Limitations
3	• Aida Esmaeilidouk • Mohana Rambe • Amir Ardestani-Jaafari • Eric Li • Barb Marcolin	2023	Food bank operations: review of operation research methods and challenges during COVID-19	PRISMA, keyword search, data collection, OR models (MILP, LP, DP).	Food banks faced supply disruptions, inventory issues, volunteer shortage.	Limited databases used, focus only on operations, missing broader analysis.

Summary:

i. The paper "Addressing Urban Food Insecurity Through Data-driven and Community - Centric Smart City Frameworks" mainly focuses on using data and smart city concepts to solve problems in urban areas. It explains that the food shortage is not only due to lack of food but also because of less access and sharing. The paper uses techniques like data analysis, locating food shortage areas, and estimating food requirements by area where food is needed. It also highlights the importance of involvement of the community. The outcome shows that combining the technology with community involvement can improve food distribution in a better way.

ii. The paper "Food Share: A Collaborative Platform for food Donation and Distribution" mainly focuses on improving food sharing using digital systems. It explains that hunger problems can be reduced if food is properly managed and distributed. The paper illustrates using online platforms, databases, tracking and navigation Systems for handling, food donations and delivery. The techniques used mainly digital. The outcome shows that such systems can reduce food waste and shortage can make distribution faster.

iii. The paper "Food Bank Operations: Review of operation Research Methods and Challenges During COVID-19" is a review-based study. It analyses how food banks operate and what challenges they face. It figures out the most efficient ways to Handle supplies and get products where they need to go. The study of the paper found that during COVID-19, food banks had high demands, shortage of food and lack of volunteers. It suggests better planning and management can improve food bank performance.

IV. Research Gap:

In existing work, many solutions are already there like apps such as Olio and Khanaa.app and also different research papers. These platforms help people to donate extra food and reduce food waste, and research papers explain how data and systems can improve food distribution. But still there are some important things missing.

First, most apps like Olio mainly focus on food sharing to nearby people, but they do not properly manage food banks, volunteers, and large number of needy people at the same time. Khanaa.app is good for donation, but it is not very strong in real-time tracking and proper system management.

Second, research papers talk more about theory, models, and analysis, but they do not give a simple working system which can be directly used by common people. Many ideas are good but are not easy to apply in real life.

Also, there are some problems which are still not properly solved:

- No proper connection between donor, receiver and volunteer in one system
- Lack of real-time updates (like who needs food now or where food is available)
- Less focus on user-friendly design, like UI
- Problem in quick distribution and transport

Because of all this, there is a need for a system which is simple, practical and easy to use, where all users can connect in one place and food can be distributed quickly without confusion.

So, our proposed work is needed to combine all these features in one web-based application, making food bank assistance and distribution more efficient and useful in real life.

V. Proposed Approach:

The proposed system, ShareBite, is designed to efficiently connect food donors with needy individuals or NGOs. First, user opens the app and does sign up or login. After that, user goes to dashboard and selects role as donor or receiver.

If user selects donor, they can add details of food like what food and how much quantity, and then submit it. After submitting, that food is shown in system. If user selects receiver, they can request food by filling details and submitting request.

In the current design, when a donor is not using the leftover food, the details about that particular food item available for donation are added on to the application. As soon as the data is submitted, a notification is sent to the receivers/NGOs nearby who are interested to see the data, real time, and send the response for that donation.

Likewise, when a receiver/needy person needs some food then the receiver can put a request. This request is then notified to nearby donors based on their geographic location. The system has a distance based filtering of users ensuring that only potential donors within reach of a certain distance are notified to reach in lesser time for delivery.

This systematic process ensures the donors and receivers, with the NGOs in coordination, are notified at the earliest. Thus, distribution can be initiated and is carried out efficiently with minimum food wastage and greater accessibility to the people who need them.

The system shows the distance of the receiver from the donor, however also shows the estimated time to reach at a certain point. For instance, if a receiver is at 12 km, the time to reach them may be estimated to be around 30 minutes. The time estimate is not absolute; instead it depends on an estimate of the average traffic conditions and additional time to pick up and handover the food.

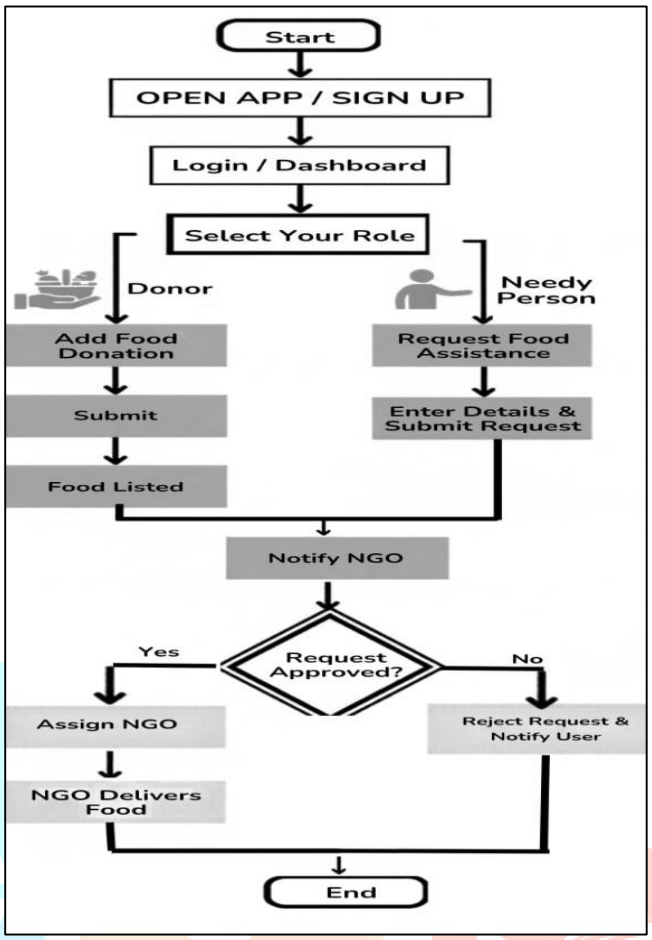
Such time estimations would allow the receiver to immediately consider accepting or rejecting the notification for themselves and make them capable of easily arranging transportation.

The proposed system therefore ensures an effective and a systematic approach to link the donors, receiver and NGO on one platform. It ensures that food is delivered at the right time through updates on distance, match of potential users within a specified range, and the estimated delivery time. It is the perfect medium through which food can reach those who need it, thereby reducing the wasted food.

System Operation Flow:

1. User opens the mobile app and does login or sign-up.
2. After login, system connects the user as donor or receiver based on selected role.
3. If user is donor, they add food details like food type and expiry time.
4. Donor then sets the pick-up location for easy food collection.
5. Donor can also manage donations by editing or deleting details if needed.
6. If user is receiver, they submit food requirement by entering number of people.
7. Receiver can set food preference like veg, non-veg or any.
8. Receiver then chooses delivery time, either immediate or scheduled later.
9. System processes all information and manages food distribution.
10. Users can track food or donation status to check whether food is accepted or delivered.
11. At the end, users can also give feedback or complaints for improving the system.

Flowchart:



VI. Advantages and Disadvantages:

Advantages:

The most and the biggest advantage of this application is that saves environment by reducing food waste, because, fresh and clean foods, in most of the social events, restaurants is thrown away daily. This system provides a platform where such foods can be used to donate instead of being thrown away, ensuring better use of available resources.

Second most important advantage is that it helps in feeding needy and homeless people. It has been estimated that around 9 million people die from hunger related causes each year globally, and so this makes it easy for people in need to request food and receive help on time. This is how; it improves quality of life for many individuals.

Third most important advantage is of Transparency. Each and every donation is tracked and recorded in the application which ensures that the food is picked/ delivered at the right time and to the right people. The involvement of NGOs in the verification process adds trust and reliability.

Fourthly, this application is designed with a very easy and simple interface, making it easy for people of different ages groups to use it. it is designed in such a simple way, that even people with less mobile phone usage, can register, donate or request for food.

Lastly, this application makes the overall procedure easy, reducing time and effort as compared to the traditional manual methods. Instead of physically searching for food banks or donors, users can access everything through their mobile phones.

Disadvantages:

Despite having a lot of pros, this application also has certain limitations. One of the major disadvantages is that it requires internet access and smartphone. This makes it harder for people in remote or underdeveloped areas to use and access this application.

Another limitation is about the heavy dependency on user participation. If donors, volunteers or NGOs are not actively involved, the system would not function effectively. Hence this application relies solely on willingness of People to contribute.

Another disadvantage is related to privacy of data and security. Since this app requires personal information of users such as name, address, contact details, there is a risk that the data can be leaked and is not protected.

Second major disadvantage is of ensuring the quality of food. Even though NGO'S check requests frequently, it is still difficult to ensure if the food is safe and suitable for consumption.

Lastly, the application has limited reach in the initial stages and requires promotion through posters and advertisements and may take time to make people aware of the application and use it frequently.

VII. Applications:

1)The Food Bank Assistance and Distribution System can be used in many real-life situations where food needs to be collected and shared.
2)Its main purpose is to reduce food wastage and provide food to people who are in need.
The system is useful for different sectors, making it a multipurpose solution.

a) Use in NGOs:
- i) NGOs can use this application to manage food donations and distribution.
- ii) It helps solve problems like poor coordination and lack of communication.
- iii) NGOs can track requests, verify information, and organize deliveries easily.
- iv) It ensures that food reaches the right people at the right time.

b) Use in Disaster Management:
- i) Helpful during emergencies like floods, earthquakes, or pandemics.
- ii) Connects donors and organizations quickly.
- iii) Helps in proper planning and fast distribution of food.
- iv) Reduces confusion and improves response time in critical situations.

c) Use in Community Service Programs:
- i) Can be used by schools, colleges, and local groups during food donation drives.
- ii) Helps in collecting donor details and managing food records.
- iii) Makes the process more organized and transparent.
- iv) Encourages more people to participate in social activities.

d) Use in Smart City Projects:
- i) Can be integrated into digital systems used by modern cities.
- ii) Helps in monitoring food wastage and food availability.
- iii) Assists authorities in identifying areas where food is needed the most.
- iv) Supports better planning and management of resources.

e) Use in Government Welfare Schemes:
- i) Improves the efficiency of food-related government programs.
- ii) Provides real-time data for better decision-making.
- iii) Ensures fair and proper distribution of food.
- iv) Helps reduce delays and mismanagement.

Overall, the system connects people who have extra food with those who need it.
It makes the entire process of food distribution faster, simpler, and more reliable.

VIII. Conclusion

The design and evaluation of the ShareBite platform show that the main challenge in redistributing food is not the lack of food, but the absence of proper coordination and management. This system is designed by focusing on the needs of the receivers, offering useful details such as the number of people that can be served and real-time distance tracking. The study demonstrates that using such a digital solution can effectively reduce the time required to collect and deliver surplus food.

The project developed a system with two types of users that helps improve communication between donors and receiver. During the development, it was found that showing visual feedback, such as impact counters like "Total Meals Saved," makes users more interested by showing the results of their contribution. Also, providing clear information about distance and travel time, helps receiver decide whether they can collect the food before it gets spoiled. Overall, these features make the system more useful and effective.

This project contributes to the field of Information Technology for by providing a system that can be easily expanded and used at a local level for managing resources. Unlike large and centralized food banks, the ShareBite platform shows that a simple web-based system can help small local organizations work more efficiently, similar to bigger organizations. It also provides a model for how basic web technologies, such as JavaScript, Python, HTML, Figma can be used to solve important global problems like hunger.

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