LITERATURE SURVEY ON WEB TECHNOLOGY ENABLED FOOD SURPLUS SYSTEM

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Article Info	*Abstract:*
Article History: *Published:* 25 Jan 2026 *Publication Issue:* *Volume 3, Issue 01* *January-2026* *Page Number:* *568-573* *Corresponding Author:* *Vignesh P*	Food wastage and hunger are two critical global challenges that exist simultaneously. Large quantities of edible food are discarded every day by restaurants, supermarkets, event organizers, and food service industries, while millions of people continue to suffer from hunger and malnutrition. The lack of a centralized platform for managing surplus food results in inefficient coordination between food donors and organizations serving underprivileged communities. To address this problem, this project proposes the Zero Hunger Portal: Surplus Food Collection and Distribution System, a web-based application designed to efficiently manage surplus food donation and redistribution. ***Keywords:*** Food surplus management, Web technology, Food redistribution, Zero Hunger, Food waste reduction

1. Introduction

Food insecurity and food wastage represent a major imbalance in modern society. Technological solutions have been increasingly explored to reduce food waste and improve redistribution efficiency. Recent research and patented systems focus on automation, inventory tracking, and digital platforms for managing surplus food. This literature survey reviews existing systems and patent-based solutions related to surplus food management and highlights the research gap addressed by the proposed Zero Hunger Portal.

This system leverages web-based technologies to create a centralized platform where food donors can easily register and list surplus items, and beneficiaries or NGOs can request and receive food in a timely manner. By automating the collection, tracking, and allocation of surplus food, the system minimizes wastage, ensures transparency, and promotes social welfare.

2. Food Surplus Management

Food Surplus Management refers to the systematic process of collecting, tracking, and handling excess food from various sources such as restaurants, markets, and households. The goal is to ensure that surplus food is efficiently distributed to those in need, minimizing waste while addressing food insecurity.

- Helps reduce the environmental impact caused by food wastage by lowering methane emissions from decomposing food.

- Ensures timely delivery of fresh and safe food to vulnerable populations, improving nutrition and health outcomes.

- Promotes awareness among communities and businesses about responsible food consumption and sharing practices.

- Supports government and NGO initiatives in achieving food security targets and social welfare programs

2.1 Tracking and Monitoring

Proper tracking and monitoring systems play a crucial role in food surplus management. These systems help record the quantity and type of surplus food collected from various sources, ensuring nothing is lost or overlooked. They also track the quality and expiration dates of food items to prevent distribution of spoiled or unsafe food. Real-time monitoring allows managers to identify urgent needs and prioritize distribution efficiently. Digital tools and web platforms can generate alerts for items nearing expiration, reducing waste. Additionally, monitoring provides transparency for donors and stakeholders, building trust and encouraging participation in the system. Overall, tracking ensures that surplus food reaches the right beneficiaries in a safe and timely manner.

2.2 Efficient logistics

Efficient logistics is essential for the successful management of surplus food. It involves planning the collection, transportation, and storage of food to ensure it remains fresh and safe for consumption. Proper routing and scheduling reduce delays and minimize the risk of spoilage during transit. Cold storage and temperature-controlled vehicles may be used for perishable items to maintain quality. Logistics also includes coordinating with multiple donors and distribution points to optimize resource use. By streamlining these processes, the system ensures that surplus food reaches beneficiaries quickly and efficiently, while reducing operational costs and wastage. Effective logistics ultimately strengthens the overall impact of food surplus management initiatives.

3. Web Technology

Web technology refers to the use of online platforms, applications, and digital tools to facilitate processes **over** the internet. In the context of food surplus management, web technology enables real-time communication, monitoring, and coordination among donors, volunteers, NGOs, and beneficiaries. It makes the collection, tracking, and distribution of surplus food faster, more transparent, and scalable, reducing manual errors and inefficiencies. By leveraging web-based systems, stakeholders can easily access information, update data, and make informed decisions to optimize food redistribution.

## 3.1 Role of Web Technology in Food Surplus Management

- Real-time Tracking: Enables monitoring of surplus food quantities, locations, and expiration dates instantly.

- Donor-Beneficiary Connection: Connects food donors, NGOs, and beneficiaries efficiently through web platforms.

- Automated Notifications: Sends alerts to volunteers and stakeholders about urgent pickups, deliveries, or expiring food.

- Data Management: Allows storing and updating records digitally, reducing manual errors and improving transparency.

- Scalability: Makes the system easily expandable to handle larger communities, more donors, and beneficiaries.

4. Food redistribution

Food redistribution is the process of transferring surplus food from sources of excess, such as restaurants, hotels, markets, and households, to individuals or organizations in need. It ensures that edible food does not go to waste and reaches people facing food insecurity, hunger, or malnutrition. Effective food redistribution requires proper planning, coordination, and logistics to maintain food quality and safety during collection, storage, and delivery. By connecting donors with beneficiaries through organized systems, redistribution promotes social responsibility and community engagement. It also helps reduce the environmental impact of food waste, conserves resources, and supports government and NGO initiatives aimed at achieving food security. Overall, food redistribution plays a vital role in addressing hunger while promoting sustainability and social welfare.

4.1 Flow chart
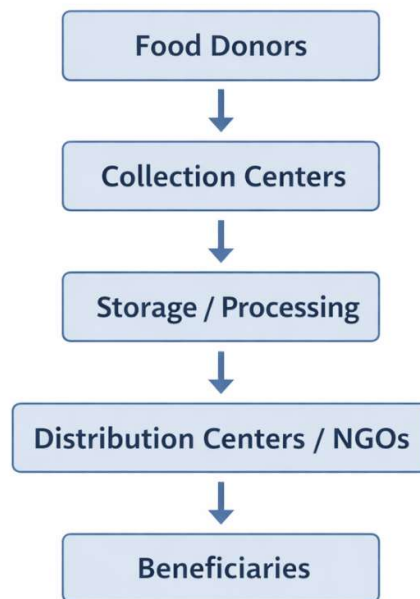
4.2 Automation in Food Management

Automation is key to managing large-scale food surplus efficiently. Automated systems help monitor perishable food, prioritize urgent deliveries, and maintain accurate records across multiple stakeholders. Real-time data collection and processing reduce delays, improve planning, and optimize the overall food redistribution network.

- Inventory Management: Digital tools maintain accurate records of all collected food items, reducing manual errors and improving planning.

- Route Optimization: Automation can calculate the fastest or most efficient routes for pickups and deliveries, saving time and resources.
- Alerts and Notifications: Automated alerts notify volunteers and stakeholders about perishable food, urgent pickups, or distribution deadlines

WORK FLOW
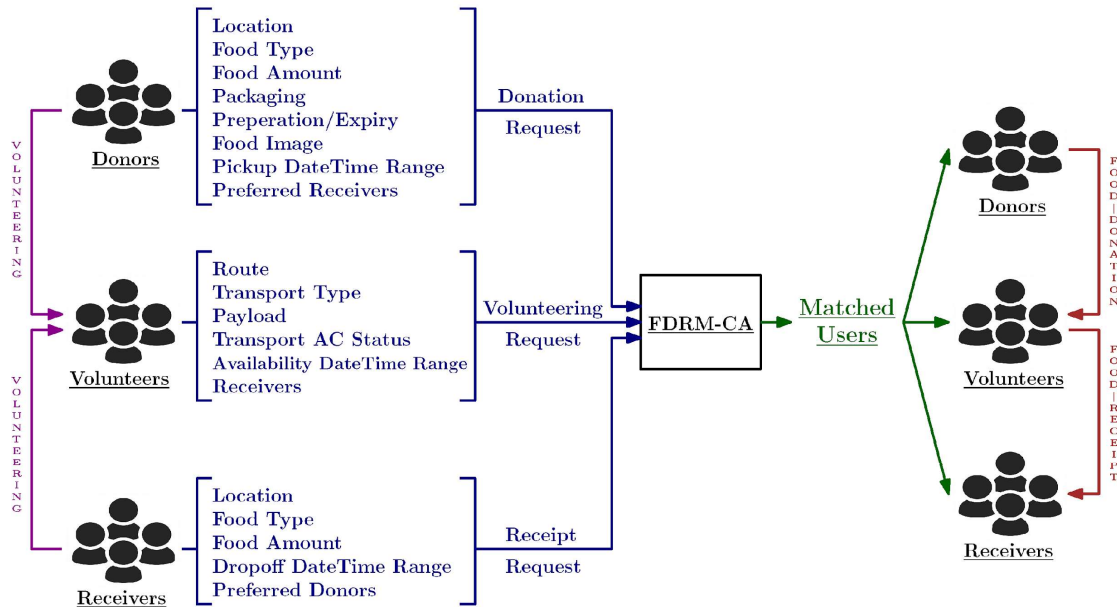
5. Zero Hunger

Zero Hunger is a global initiative aimed at eliminating hunger and ensuring access to sufficient, safe, and nutritious food for all individuals. Effective food surplus management directly contributes to achieving this goal by redistributing excess food to people in need, particularly vulnerable populations. By connecting donors, NGOs, and beneficiaries through organized systems, surplus food reaches those who would otherwise face food insecurity. Additionally, integrating automation, tracking, and web-based coordination ensures that food distribution is timely, transparent, and efficient. Initiatives like these not only provide immediate relief from hunger but also promote long-term social welfare, equitable access to resources, and community awareness about responsible food consumption.

- Ensures Food Access: Redistributing surplus food helps provide safe and nutritious meals to underprivileged and vulnerable populations.
- Supports Social Equity: Connecting donors, NGOs, and beneficiaries promotes fairness and equal access to essential food resources.
- Long-Term Community Impact: Effective food management systems reduce hunger sustainably while raising awareness about responsible consumption and social responsibility.

6. Food Waste Reduction

Food waste reduction focuses on minimizing the amount of food that is discarded or lost throughout the supply chain. Managing surplus food efficiently helps prevent edible food from going to waste by ensuring it reaches beneficiaries instead of landfills. Key strategies include proper collection, storage, sorting, and redistribution of food items, supported by digital tracking and automation for efficiency. Reducing food waste also has significant environmental benefits, such as conserving natural resources, reducing greenhouse gas emissions, and promoting sustainability.

7. Conclusion

The literature survey indicates that although several technological solutions exist for food waste reduction and inventory management, limited attention has been given to surplus food redistribution at the community level. The proposed Zero Hunger Portal bridges this gap by providing a centralized, web-based system with real-time tracking, automated matching, and analytics. The system offers a practical and socially impactful solution aligned with Sustainable Development Goal 2 – Zero Hunger.

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