International Journal of Engineering & Extended Technologies Research (IJEETR)

|ISSN: 2322-0163| www.ijeetr.com | A Bimonthly, Peer Reviewed, Scholarly Indexed Journal |

| Volume 8, Issue 2, March - April 2026 |

DOI:10.15662/IJEETR.2026.0802053

Smart Food Saver: Channeling Surplus at Event to Orphanages and Senior Citizen Centers

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Publication History: Received: 25.02.2026; Revised: 20.03.2026; Accepted: 25.03. 2026; Published: 28.03.2026.

ABSTRACT: This is difficult to ignore the waste of food at big events, banquets, and hotels when so many poorer communities are fighting hunger. The Smart Food Saver Solution The Smart Food Saver is a mobile based platform that reduces the mismatch by redirecting excess food from events to orphanages and senior citizen homes. The platform allows hotels and event organizers to register excess food, and NGOs and volunteers in the vicinity receive instant alerts to collect and distribute. Built-in GPS location, food quantity registration, and time-based notification help you deliver fresh and safe foods. By bridging the gap between donors and recipients digitally, the application enhances sustainability, prevents food wastage, and encourages the welfare of the community. The initiative shows how even simple technology can build social responsibility and a fairer society.

KEYWORDS: Handling waste from food surplus food donation event management mobile application orphanages senior citizen centers sustainability community welfare.

I. INTRODUCTION

Food waste is one of the major global issues, and a large proportion of the food produced goes to waste. Big events, hotels, weddings and the like can have a lot of leftover food that is never used. The waste impacts the environment, but more so it's a waste of resources, which is intense," he added. Simultaneously, homes for the aged and orphanages often find it difficult to serve adequate meal to their inmates. To link these two - surplus and need - is important in fostering both social and environmental sustainability. Technology also can be instrumental in developing practical solutions to decrease food waste and assist at-risk populations. As technology progresses, mobile apps are becoming influential entities to solve practical day-to-day issues. Food Saver Mobile Application is one such effort, which creates a link between food donors and receivers and tries to reduce the food loss. The app creates an online community where people, restaurants and organizations that have surplus food can quickly and efficiently donate it to those in need. With simple interfaces and intelligent technologies, the app motivates users to share surplus food rather than throw it away.

The target audience is the eventers who hold food unused and organizations who need it. Event organizers and hotels can use this system to register leftovers in real-time stating location, quantity, food type. NGOs and volunteers are instantly alerted to safely harvest and distribute the food. This mechanism guarantees an efficient, timely and transparent food donation process, and donors are more willing to make an active part in food donation. With simplicity in mind, the app is built in such a way that maximum participation of all the players can be expected.
The main functions of the application are GPS tracking, real-time notifications, logging of food quantity, and alert on time to pick up and delivery on time. Discarded food produces methane, harmful to the atmosphere. The app's redistribution of food also reduces environmental damage and encourages the sustainable use of resources. This is in line with international processes like the UN Sustainable Development Goal 12.3 to reduce food waste by 50 % by 2030.

The Summary Smart Food Saver case demonstrates how technology can turn a social issue into a solution. The app bridges hotel, event and marriage food surplus with orphanages and senior citizen homes, minimising food wastage and

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lending a hand to the underprivileged. It promotes sustainability and community engagement and is a testament to how basic digital tool can be used to effect such a large social impact. Here, surplus food is transformed into food for the hungry, turning waste into health and building up a fairer society.

II. LITERATURE SURVEY

Studies suggest that grassroots, community-driven projects tend to work in a digital environment that is incompatible with their values, and they are therefore required to grow their own 'digital ecologies' (Berns & Rossitto, 2019; Lampinen et al., 2022). Such ecologies might involve a mixture of customized platforms, for example Karrot, and using pre-packaged commercial products such as social media and messaging platforms to manage events. While this approach has some practical benefits such as enabling different community scales of participation and shielding from single points-of-failure, it is complex and introduces fragile dependencies (Ntouros et al., 2021; Rossitto et al., 2021b). For these reasons, scholars point to increased interoperability as a critical design principle through which to simplify these arrangements, enable additional data portability, and enhance the efficiency and sustainability of digital infrastructure for community use [1].

Food Waste Management Legislation in Serbia Serbian legislation on waste management is still not particularly oriented towards the reduction and recovery of food waste. The "Waste Management Act" lays the groundwork for overall waste reduction, but not for food waste. The "Waste Management Plan of the Republic of Serbia for the period 2022–2031" promotes sustainable utilization of waste, but its application in food waste management was rendered weak by lack of resources and weak compliance monitoring. Development of green technologies and sustainable product design within the waste generation prevention plan in the Republic of Serbia 2025. In addition, the "Program for the Development of Circular Economy in the Republic of Serbia for the Period 2022–2024" contains a pilot project on collecting food waste in the HORECA industry. Nevertheless, Serbia's infrastructure for the collection and treatment of food waste is poor, and it is estimated that 99 per cent of food waste is disposed of in landfill. The absence of composting and anaerobic digestion infrastructure is a further barrier. In order to advance food waste management, Serbia needs to update strategies for food waste prevention and planning for resource recovery from food waste as well [2].

The study underscores the importance of the food waste issue, that Malaysian are daily generating 1.1 kg of solid waste per person that leads to a nationwide problem (Pariatamby, 2017). Malaysia, on its part, has pledged to the UN's Sustainable Development Goal 12.3 to reduce food waste per capita by half by 2030 (DSDG, 2017). The research also points out that a successful food waste reduction has to take into account the behavioural drivers of the households. It implies that government policy tools, such as assistance programs, can increase households' perceptions of control over waste management. Still the authors caution that there are few evaluations of these food waste schemes, pointing to a need for stronger policy evaluation and campaigns to raise awareness amongst households [3].

A review of the literature shows that household food waste is a pressing global problem, and that European households contribute to more than half of this waste. Poor shopping planning, misinterpretation of date labels, and insufficient inventory management are main drivers. In response, a number of consumer-focused digital solutions now exist to help track food, alert on expiration, and even suggest recipes for items that are about to expire. But existing products, including FoodKeeper, CozZo, and No Waste, have limited functionality and availability, and most do not integrate with retailer data. This gap calls for more integrated, intuitive approaches that merge the shopping assistance, waste monitoring and behavioural knowledge streams to reduce food waste at the household level effectively [4].

A review of the literature illustrates that food waste constitutes a major challenge on a global scale with health, environmental, and economic implications, especially in the urban areas of developing nations. Among the main drivers are economic development, urbanization, changes in consumption patterns, and behavioral aspects (over-purchasing and poor management of food in the home). Studies underline that waste management should move away from stigmatizing landfilling and instead implement comprehensive approaches that centre on prevention, minimization and recycling. Sustainable strategies, such as increasing public awareness, improving retail practices and food packaging, and strengthening recycling systems, are needed to address food waste, with potential benefits for reducing the cost of waste management and contributing toward the achievement of other sustainable development targets [5].

A review of the literature shows that LCA is the best suitable approach for assessing the environmental impacts of food waste management options, including anaerobic digestion (AD), composting, incineration and landfilling. These are

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LCI data collected from the scientific literature and governmental reports that have been aggregated and harmonized to model inputs and outputs and emissions associated with each process. The study also highlights that well-informed choices require holistic consideration of trade-offs in various categories of environmental impact rather than focusing solely on GHGs. Parameterized such datasets, allow for comparison of end-of-life alternatives and thus can inform sustainable waste management strategies in a transparent, tailor-made, and data-rich manner [6].

III. METHODOLOGY

3.1 Assessing the Need & Capacity:

The "Need & Capacity Assessment" approach is used to assess the needs of a community, organization, or population and their potential response to those needs. This involves comparing needs and gaps, as well as prioritizing among identified needs for key challenges, resources, and gaps through data collection, stakeholder input, and environmental scans. This can aid in assessing readiness and the ability to take action in a way that supports appropriate and sustainable interventions. The approach ensures that decisions are informed by evidence and commensurate with the capacity to execute successfully.

3.2 Food Collection & Transportation Logistics:

This is the organized collection and transport of leftover food from events to institutions like orphanages and homes for the aged. The process includes liaising with the organizers of events at which surplus food will be available, identifying the food, handling it safely and hygienically, and making the necessary arrangements for collection. A specialized logistics team is responsible for the transportation process, and they ensure that routes are optimally planned to reduce food loss. This method makes certain food is delivered to the recipient at the right temperature and in the best quality, while complying with the food safety and the regulatory requirements.

3.3 Food Distribution & Management:

Distribution & Management Concentration is rooted in the efficient and fair distribution of surplus food to orphanages and homes for aged. With this approach, food is organized, labeled, and portioned according to nutritional requirements and taste preferences of those who receive it. An organized system for management is established to monitor inventory, ensure food safety, and deliver in a timely manner to the local partners. This process promotes transparency and accountability to ensure that food surplus is fairly distributed, so that food waste is minimized, while the needs of at risk community members are met~ surplus food is distributed fairly, allowing for minimal waste, while meeting the needs of at-risk community members.

3.4 Partnerships & Collaboration:

"Partnerships & Collaboration" is a part of the organization that advises on and maintains the overall collaboration with event holders, local food banks, orphanages, and centers for elder citizens. It facilitates collaboration and resource coordination across the board – resources, know-how, logistics, etc. Local business and volunteer support make it possible to establish strategic partnerships to gather, transport and distribute excess food. This methodology leverages the power of the campaign, fostering a shared responsibility and connecting communities for sustainable success.

3.5 Sustainability & Scaling:

Sustainability & Scaling" ensures the sustainability and scaling up of the food surplus action. With the development of processes, securing for sustainable partnerships, multiple sources of funding for the programme, the method seeks to become self-sustaining. The project also adopts the approach of priority integration into local systems through which food redistribution normalizes. As the model succeeds, it is scaled to more events, communities, and larger recipient networks, spreading its impact far and wide.

3.6 Impact Measurement & Feedback Loop:

Monitoring of results and creating a feedback loop" means regularly monitoring the results of the surplus food redistribution program to verify its effectiveness and make improvements over time. Important indicators like amount of food provided, satisfaction among recipients and level of community participation are monitored and analysed on a regular basis. Feedback from both beneficiaries and stakeholders on potential areas for improvement is collected. This evidence-based process enables the program to be modified, if necessary, to meet the needs of the community more effectively and to achieve its goals

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3.7 Testing Tools:

Redirecting event excess food to orphanages and homes for the aged," is an innovative solution to waste reduction with the goal of creating a support system for those in need of food in the local community. For the development and the evaluation of an effort like this, multiple tool types can be tried out.

Food collection and inventory First There are two important categories of tools: food collection program and inventory program.

Simple tools such as Excel spreadsheets or Google Sheets can be used to track the amount, type and source of food, whereas more sophisticated tools, like Airtable, can send automated alerts and generate reports. Apps like OLIO or Too Good To Go are also known for listing and sharing excess food among other things. Test these tools – potentially by role playing at an event, logging surplus food—to see which process works best for you and the volunteers.

A practice delivery run can be used to evaluate the feasibility of these instruments and the time it takes to they are Test for feasibility and time Third, food safety is assured and such a tool guarantees that the food being transferred is safe to eat. Information such as Digital Thermometer, temperature-logging apps and digital checklists can be used in monitoring the storage and handling of food. A labeling system can also reduce the risk for food spoilage. Volunteers can be evaluated for compliance to these procedures to determine areas for potential improvement.

The trial demonstrated how these three factors, inventory management, logistics coordination and impact reporting tools could be combined in a single solution to food redistribution. Some difficulties, including the availability of surplus food at the last minute and volunteer scheduling, were noted and these should be addressed by better planning and (potentially) by codifying protocols through a set of standard operating procedures for future events. In summary, the project established that a structured system for redistribution of surplus food is practical and desirable, providing positive social benefit and there exists an excellent opportunity to embed environmental sustainability, which together can deliver a replicable model for expansion and up scaling.

Figure.1

3.8 Notifications:

The Food Saver app utilizes the Firebase Cloud Messaging (FCM) service to inform users with real-time notifications. FCM allows to send notifications when food is available, provider updates or reservation confirmations. It is used to screen timely between the application and the users, so as to provide the users an awareness of foods around. With the addition of FCM, user engagement is increased and the app can provide a more fluid and responsive experience.

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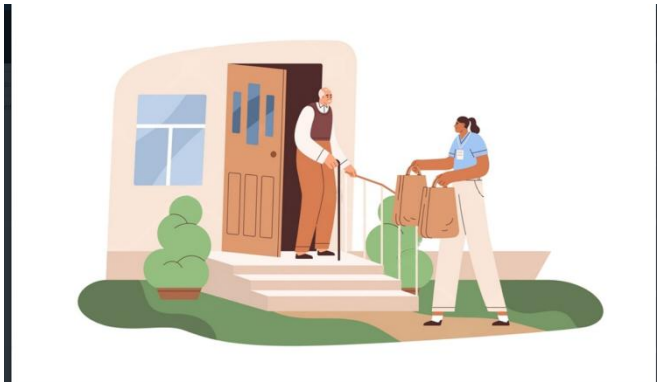
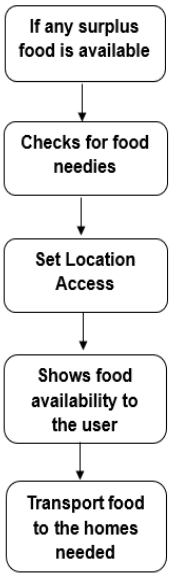


Figure.2

3.9 Flow Chart:



IV. RESULT AND DISCUSSION

User engagement was measured through various metrics, such as the frequency of interactions with the chat bot, the number of PDF documents uploaded, and the time spent on the platform. The results of this project underscore the potential of AI-driven educational tools in enhancing learning experiences The high levels of user engagement and satisfaction demonstrate that the AI Child Tutor effectively meets the needs of students seeking assistance with their studies The AI Child Tutor project successfully demonstrated the potential of artificial intelligence in enhancing educational experiences for students. By integrating various advanced technologies, including Natural Language Processing (NLP), Retrieval- Augmented Generation (RAG), and recommendation systems, the project created a robust platform that effectively supports students in their learning journeys.

V. FUTURESCOPE

In the future, integration of more new technologies and functions can further enrich the Food Saver mobile app. Artificial intelligence and image processing technology can be used to identify freshness and expiration of foods. Cloud synchronization will provide a natural data sharing among different devices and users. Cooperation with local food banks and NGOs can be developed to enable automation food donation and waste reduction. A predictive

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shopping list can also be added to predict consumption and help users to better plan shopping. User experience and accessibility will be improved thanks to live notifications, multi-language support, as well as smart kitchen appliances integration. Eat4Earth can also encourage users to change their behavior around food by introducing gamification mechanics. In addition, raising community awareness and training on food safety standards can lead to sustainable and high levels of operation and hygiene. This concept could be a model for society where a food wastage, hunger issue within a community can be solved, then target for expanding to large scale, replicable food.

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