

## WASTENOMORE-SMART FOOD WASTE LOGGER AND REDISTRIBUTION SYSTEM

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### ABSTRACT

Food waste has emerged as a major global challenge affecting environmental sustainability, economic development, and food security. Large quantities of edible food are wasted daily in restaurants, hotels, cafeterias, supermarkets, and social events due to poor planning, inefficient inventory management, and the absence of organized redistribution systems. At the same time, millions of people continue to face hunger and malnutrition. The WasteNoMore – Smart Food Waste Logger and Redistribution System is proposed as a web-based platform designed to minimize food wastage and facilitate efficient food redistribution through digital technologies. The system enables donors to log surplus food details such as quantity, location, preparation time, and expiry status, while users and NGOs can search and request nearby food in real time. The proposed platform integrates food tracking, request management, messaging services, and centralized database management to improve coordination between donors and receivers. The system is developed using Java, JSP, Servlets, Hibernate, MySQL, HTML, CSS, and JavaScript, ensuring scalability, reliability, and secure data handling. By automating food donation workflows and enabling real-time communication, the platform reduces manual effort and increases transparency in food donation activities. The proposed system also

contributes to environmental sustainability by reducing landfill waste and greenhouse gas emissions caused by food disposal. In addition, it promotes social responsibility by ensuring that surplus food reaches needy individuals and organizations before spoilage. The WasteNoMore system demonstrates how modern web technologies can be utilized to address real-world social problems effectively and support sustainable food management practices.

**Keywords:** Food Waste Management, Food Redistribution, Smart Donation System, Web Application, Sustainability, NGO Support, Hibernate, Java Servlets, MySQL, Food Tracking.

### I. INTRODUCTION

Food wastage is one of the most significant global issues affecting environmental sustainability, economic development, and food security. According to recent studies, a large percentage of food produced worldwide is wasted during preparation, storage, transportation, and consumption stages [1]. Restaurants, hotels, supermarkets, and event organizers often discard edible food due to improper inventory management and lack of efficient redistribution systems [2]. Simultaneously, millions of people continue to suffer from hunger and malnutrition across different parts of the world [3]. This imbalance between food surplus and food demand highlights

the urgent need for smart food management systems [4]. Traditional food donation methods rely heavily on manual communication, which causes delays and reduces operational efficiency [5]. Existing systems often fail to provide real-time updates, location-based tracking, and transparent request management [6]. As a result, large quantities of usable food remain wasted before reaching people in need [7]. With the rapid advancement of digital technologies and internet-based services, web applications can play a crucial role in addressing social problems effectively [8]. Smart food redistribution systems can improve communication between donors and receivers while ensuring timely delivery of surplus food [9]. The integration of databases, location-based services, and notification mechanisms can further enhance food management operations [10]. Recent research has emphasized the importance of using technology-driven approaches to reduce food wastage and support sustainability initiatives [11]. Modern web technologies such as Java Servlets, JSP, Hibernate, and MySQL provide scalable and reliable solutions for managing real-time data and user interactions [12]. The use of centralized systems improves transparency, accountability, and operational efficiency in food donation activities [13]. Digital food redistribution platforms also help organizations monitor donation activities and maintain food safety standards [14]. Furthermore, automated systems encourage participation from donors by simplifying the donation process and reducing communication barriers [15].

The WasteNoMore – Smart Food Waste Logger and Redistribution System is proposed to address these challenges through a centralized and intelligent web-based platform [16]. The system allows donors to upload food details including quantity, location, expiry time, and food images to ensure accurate

food tracking [17]. Users and NGOs can search nearby available food items and place requests based on their requirements [18]. The platform includes a request management module that allows donors to approve or reject food requests while maintaining transparency throughout the process [19]. A messaging module is integrated to support secure communication between donors and receivers [20]. The system uses role-based authentication to manage different user categories such as donors, NGOs, orphanages, and administrators [21]. Hibernate technology is utilized to simplify database operations and ensure efficient data management [22]. MySQL is used as the backend database for secure storage of user information, food details, and transaction records [23]. Java Servlets and JSP technologies support dynamic content generation and server-side processing [24]. The proposed system also incorporates validation mechanisms to prevent invalid data entry and maintain food safety standards [25]. By reducing food wastage and improving food accessibility, the system contributes to social welfare and environmental sustainability [26]. The project also demonstrates the practical application of software engineering concepts such as MVC architecture, SDLC methodologies, database integration, and web application development [27]. The implementation of the platform improves communication efficiency and minimizes manual effort involved in traditional food donation systems [28]. The proposed solution is scalable, user-friendly, and adaptable for future enhancements including machine learning-based food prediction and mobile application support [29]. Overall, WasteNoMore provides an effective, socially responsible, and technology-driven solution for smart food waste management and redistribution [30].

## II. LITERATURE SURVEY

Several researchers have proposed smart food donation and redistribution systems to minimize food wastage and support social welfare activities. Varghese et al. introduced the SeVa mobile application, which connects food donors with NGOs using location-based services and real-time communication features [1]. The system improved coordination between donors and receivers while reducing food spoilage during transportation [2]. Adarsha and Gajanan proposed a food donation web application using HTML, CSS, and Firebase technologies for real-time data management [3]. Their platform simplified food donation activities by providing online registration and communication mechanisms [4]. Karanth et al. developed a web-based surplus food management platform that enabled donors to upload food details and allowed NGOs to request food efficiently [5]. Their system emphasized transparency and quick redistribution through notification services [6]. Shivani and Usha presented a web-based food redistribution system focused on reducing dependency on manual food donation processes [7]. Their work highlighted the importance of real-time food tracking and centralized management [8]. Kavitha et al. proposed a machine learning-based Replate application that predicted surplus food availability and improved food donation planning [9]. Artificial intelligence techniques were utilized to estimate food usability and support sustainable food management practices [10]. Researchers have also explored IoT-enabled smart bins and food tracking systems to monitor food wastage levels in commercial kitchens [11]. Some studies focused on cloud-based donation systems that support secure data storage and accessibility across multiple devices [12]. Mobile applications have been widely adopted for enabling faster food sharing and

communication among users [13]. Location-aware services have significantly improved the efficiency of food collection and delivery operations [14]. Existing research also highlights the importance of database management systems in handling donor records, food details, and request tracking operations [15]. Security mechanisms such as authentication and role-based access control are essential for ensuring reliable system access and preventing misuse [16]. Many systems have integrated notification modules to provide instant updates regarding food requests and approval status [17]. Researchers have emphasized that digital food redistribution systems can reduce environmental pollution caused by food waste decomposition in landfills [18]. Studies further indicate that automated systems improve donor participation and encourage community involvement in food donation activities [19]. The adoption of web technologies such as JSP, Servlets, and Hibernate has simplified the development of scalable and efficient food management systems [20].

Despite the advancements in food redistribution technologies, several limitations still exist in current systems. Many applications lack centralized request management and fail to provide proper tracking of food expiry dates and availability status [21]. Some systems are limited to mobile platforms and do not provide comprehensive web-based support for large-scale food management operations [22]. Existing manual donation approaches often suffer from communication delays, poor coordination, and lack of transparency [23]. Several platforms do not include secure messaging services or feedback mechanisms between donors and receivers [24]. In many cases, food safety monitoring and validation processes are either limited or completely absent [25]. Researchers have also identified issues related to

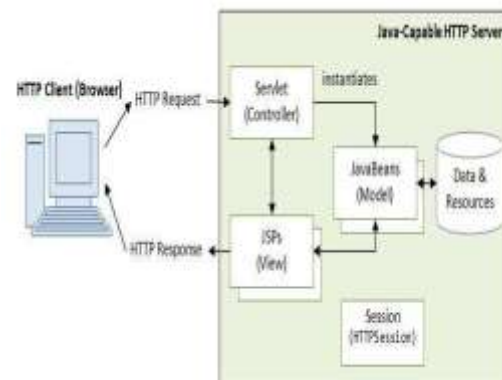
scalability and database performance when handling large numbers of food records and user requests [26]. The lack of integrated analytics prevents organizations from monitoring food wastage trends and improving operational efficiency [27]. Some systems require complex technical knowledge, reducing usability for ordinary users and small organizations [28]. Furthermore, many food redistribution platforms are not designed to support future technological enhancements such as machine learning, predictive analytics, and IoT integration [29]. Therefore, there is a need for a scalable, user-friendly, and secure web-based food redistribution platform that supports centralized food management, real-time communication, request tracking, and efficient food redistribution [30].

### III. PROPOSED SYSTEM

The proposed WasteNoMore – Smart Food Waste Logger and Redistribution System is a centralized web-based application designed to reduce food wastage and improve surplus food redistribution. The system enables donors such as restaurants, hotels, supermarkets, marriage halls, and individuals to register and upload food details including quantity, preparation time, expiry status, location, and food images. The platform provides real-time food visibility to NGOs, orphanages, and needy users, allowing them to search nearby food donations and submit requests efficiently. The system uses role-based authentication to manage different user categories securely. A request management module is implemented to track food requests, approval status, and distribution activities transparently. The platform also includes a messaging module that enables direct communication between donors and receivers to coordinate pickup activities. The use of Hibernate

and MySQL ensures secure data storage and reliable database operations. Input validation mechanisms are integrated to prevent incorrect data entry and maintain food quality standards.

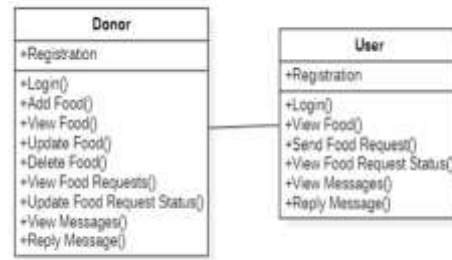
The proposed system follows the MVC architectural pattern to separate business logic, presentation layer, and database operations efficiently. Java Servlets and JSP technologies are used for dynamic web page generation and server-side processing, while HTML, CSS, and JavaScript provide an interactive user interface. The system supports CRUD operations for food management, user registration, messaging, and request handling. Real-time request tracking improves transparency and accountability in food donation activities.



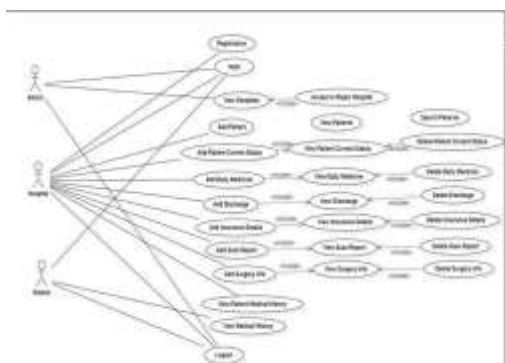
The application also reduces manual effort and communication delays associated with traditional donation methods. By providing a structured digital platform, the proposed system ensures faster redistribution of surplus food before spoilage. In addition to supporting social welfare, the platform contributes to environmental sustainability by reducing landfill waste and greenhouse gas emissions. The modular design of the system allows future enhancements such as machine learning-based food prediction, mobile application integration, and IoT-enabled food monitoring systems.

#### IV. SYSTEM DESIGN

The WasteNoMore system is designed using the Model-View-Controller (MVC) architecture, which separates the application into three major components: Model, View, and Controller. The Model layer manages data operations and business logic using Hibernate and MySQL database technologies. The View layer is developed using JSP, HTML, CSS, and JavaScript to provide an interactive and user-friendly interface. The Controller layer uses Java Servlets to handle client requests, process user actions, and communicate with the backend database. The MVC architecture improves scalability, maintainability, and modularity of the application. The system includes several modules such as donor management, user management, food management, request handling, authentication, and messaging services. Each module is designed independently to ensure efficient performance and simplified maintenance. The donor module allows users to upload and manage food details, while the user module enables NGOs and receivers to search and request available food items. The messaging module facilitates secure communication between users for food pickup coordination.



The backend database is designed using relational database concepts with multiple interconnected tables for storing login credentials, food details, user information, requests, and messages. Hibernate ORM technology is used to simplify database interactions and reduce manual SQL query management. The system also incorporates user validation and session management features to ensure secure access and reliable operation. Deployment architecture includes a client browser, Apache Tomcat server, Java application layer, and MySQL database server. The software development process follows the Spiral Model under the Software Development Life Cycle (SDLC), enabling iterative development, risk analysis, testing, and continuous improvement. Unit testing, integration testing, functional testing, and performance testing are conducted to ensure proper system functionality and reliability. The modular design of the platform allows future integration with advanced technologies such as cloud services, machine learning algorithms, and mobile applications for enhanced scalability and intelligent food management.



#### V. RESULTS



Fig 9.2: Login



Fig 9.5 :View Messages



The proposed web-based platform successfully connects food donors with NGOs, orphanages, and needy individuals through a centralized digital system. By enabling real-time food logging, request management, and communication, the system minimizes delays and improves transparency in food donation activities. The integration of Java Servlets, JSP, Hibernate, MySQL, HTML, CSS, and JavaScript ensures efficient system performance, secure data management, and scalability. The use of MVC architecture and SDLC methodologies further enhances maintainability and reliability of the application. The platform reduces manual effort involved in traditional food donation methods and supports timely redistribution of food before spoilage. Through proper request tracking and database management, the system improves accountability and coordination between donors and receivers. The proposed solution also contributes to environmental sustainability by reducing food disposal and minimizing landfill waste. Furthermore, the project promotes social responsibility by helping food reach underprivileged communities efficiently. The modular structure of the system allows future enhancements such as mobile application integration, cloud deployment, IoT-enabled food monitoring, and machine learning-based food prediction systems. Overall, the WasteNoMore platform demonstrates how modern web technologies can be effectively applied to solve real-world social and environmental challenges while supporting sustainable food management practices.

## VI. CONCLUSION

The WasteNoMore – Smart Food Waste Logger and Redistribution System provides an effective and technology-driven solution for reducing food wastage and improving surplus food distribution.

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# International Journal of DATA SCIENCE AND IOT MANAGEMENT SYSTEM

Peer Reviewed, Referred & Indexed Journal

ISSN: 3068-272X

www.ijdim.com

Original Research Paper

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