LONDON METROPOLITAN UNIVERSITY

islington college
(इस्लिङ्टन कलेज)

Module Code & Title

CS6P05 Final Year Project MAD

Food Share – Android App

Assessment Weightage & Type

30% FYP Interim Report

Supervisor By

Mr. Shekhar Timsina

Mr. Bishal Gharti Chhetri (GC)

Student Details

Name: Sita Ram Thing

London Met Id: 22015892

College Id: NP01MA4S220003

Islington College, Kathmandu

24 April 2024

Chapter 1: INTRODUCTION

Many countries, including Nepal, grapple with the challenges of development, where significant portions of the population face unemployment and poverty. In urban areas, the plight of the homeless and impoverished individuals struggling to afford basic meals is particularly pronounced. Recognizing this pressing issue, initiatives have emerged to address food scarcity by redistributing surplus food resources to those in need. Among these initiatives is the Food Donation App, known as "Food Share," which harnesses technology to streamline the process of collecting and distributing surplus food.

1.1 Project Introduction

In the ever-evolving landscape of technological advancements, the Food Donation App, "Food Share," stands as a testament to the transformative power of innovation in addressing social challenges. Spearheaded by Yuvraj Tamang of ING Food Company, this project aims to revolutionise the charitable food donation sector by leveraging digital solutions. By providing a platform for efficient surplus food collection and distribution, the Food Share app bridges the gap between surplus food sources and vulnerable communities, thereby reducing food waste and alleviating hunger.

By consolidating surplus food resources and facilitating their redistribution to those in need, the Food Share app embodies a paradigm shift in charitable food donations. Its user-friendly interface and innovative features empower individuals and organizations to contribute to the fight against food scarcity and waste. Through the collaborative efforts of stakeholders, this digital solution promises to make a meaningful impact in ensuring that no one goes hungry in communities where access to food remains a daily challenge.

1.2. Current Scenario

The juxtaposition of surplus food waste with pervasive hunger and malnutrition presents a poignant paradox. Developed nations discard vast quantities of perfectly edible food daily, contributing to environmental degradation and resource inefficiency. Supermarkets, restaurants, and households are major contributors to this surplus, often disposing of food due to overproduction, expiration dates, or aesthetic imperfections. The resulting environmental impact, including methane emissions from landfills, underscores the urgency of addressing this issue.

Concurrently, in many developing nations like Nepal, food insecurity remains a pressing concern despite ample food resources. Limited infrastructure for storage, transportation and costly prices to some low-income sources people cannot afford food coupled with poor market linkages and awareness, exacerbates the problem of food wastage. Even as a significant portion of the population faces hunger and malnutrition, surplus food, often deemed unsuitable for sale due to cosmetic imperfections or nearing expiration dates, goes to waste. This paradox highlights the critical need for innovative solutions to bridge the gap between surplus food sources and vulnerable communities.

In Nepal, where 5.1% of the employed population lives below the poverty line of $1.90 purchasing power parity/day, the challenge of food waste exacerbates existing inequalities. Effectively managing this surplus could significantly alleviate hunger and malnutrition in communities where access to food remains a daily challenge. Addressing this issue requires a multifaceted approach, including the implementation of efficient distribution channels, community education on food preservation and utilization, and the creation of systems that redirect surplus food to those in need. By ensuring that valuable resources are not needlessly discarded, while many go without adequate nutrition, these efforts can contribute to a more equitable and sustainable food system.

1.3. Problem Domain and Project as a Solution

In the face of the multifaceted challenges posed by surplus food, the Food Share app emerges as a transformative solution. This visionary project leverages technology to streamline the collection and redistribution of surplus food, addressing not only the logistical hurdles of surplus food management but also the underlying issues of environmental degradation and food insecurity. By serving as a comprehensive platform, the app revolutionizes the process of surplus food distribution, ensuring that valuable resources are efficiently allocated to those in need.

The Food Share app lies in its ability to bridge the gap between surplus food providers and marginalized communities. Through its user-friendly interface, donors can easily input surplus food details, including type, quantity, and expiry dates, with location facilitating a seamless donation process. The app then matches surplus food to the specific requirements of shelters and communities, ensuring that resources reach where they are most needed. Moreover, the inclusion of educational resources and awareness campaigns empowers both donors and volunteers (recipients) with knowledge about waste reduction and responsible food utilization, fostering a culture of social responsibility.

By facilitating efficient surplus food distribution and promoting education and awareness, the Food Share app embodies a holistic approach to addressing the global challenge of food. Through its innovative features and commitment to sustainability, this project promises to make a meaningful impact in ensuring that no one goes hungry while valuable resources are not needlessly discarded.

1.4. Aim and objectives.

1.4.1. Aim

The food donation system aims to minimize food waste by efficiently redistributing surplus food to needy communities, reducing hunger, and fostering a more equitable and sustainable food distribution network.

1.4.2. Objectives

➢ Develop a user-friendly interface to facilitate surplus food input, donation matching, and recipient organization interaction.

➢ Establish a secure database management system to efficiently store and retrieve surplus food data, ensuring data integrity and confidentiality.

➢ Integrate an effective communication system between food providers and recipient organizations through API programming, enabling seamless coordination and information exchange.

➢ Implement innovative design elements, incorporating UI/UX principles and material design for an engaging user experience, enhancing accessibility and usability.

➢ Conduct comprehensive research on existing technologies and tools, identifying and integrating the most suitable ones for optimal application functionality, ensuring the app's effectiveness and efficiency.

➢ Ensure scalability and adaptability of the food donation platform to accommodate potential expansion and growth, allowing it to meet increasing demands and evolving needs.

➢ Promote community engagement and awareness through features that educate users about food waste reduction and proper food utilization, fostering a culture of responsible consumption and social responsibility.

1.5. Structure of the Report

1.5.1. Background

The development phase of the Food Share app involved the creation of both web and mobile platforms. The mobile platform, developed using Kotlin and Jetpack Compose, allows users to access the app's features seamlessly. On the other hand, the web platform, built using Django, HTML, CSS, and Bootstrap, serves as an administrative interface for managing the app's operations. Design considerations encompassed creating a user-friendly interface, establishing database management systems, and integrating communication systems for efficient food distribution. Throughout the implementation process, various challenges were encountered and addressed. These challenges ranged from technical complexities in integrating APIs to ensuring data security and scalability.

1.5.2. Development

The development phase of the Food Share app involved the creation of both web and mobile platforms. The mobile platform, developed using Kotlin and Jetpack Compose, allows users to access the app's features seamlessly. On the other hand, the web platform, built using Django, HTML, CSS, and Bootstrap, serves as an administrative interface for managing the app's operations. Design considerations encompassed creating a user-friendly interface, establishing database management systems, and integrating communication systems for efficient food distribution. Throughout the implementation process, various challenges were encountered and addressed. These challenges ranged from technical complexities in integrating APIs to ensuring data security and scalability.

1.5.3. Testing and analysis

The testing phase involved rigorous quality assurance measures to ensure the app's functionality, performance, and user experience met the desired standards. Testing

methodologies included unit testing and system testing with user feedback. Testing focused on individual components of the app, verifying their correctness and robustness. Integration testing validated the interactions between different modules and systems, ensuring seamless functionality. The analysis of test results revealed areas of strength and areas for improvement. Positive outcomes included the app's intuitive user interface, efficient food donation matching, and secure data management. Areas identified for improvement included performance optimisation, user engagement features, and accessibility enhancements.

1.5.4. Conclusion

The Food Share app project represents a significant step forward in leveraging technology to address surplus food and food insecurity. Despite challenges encountered during development, the project has succeeded in creating a platform that streamlines the process of surplus food redistribution and fosters community engagement.

Looking ahead, continued efforts will be directed towards refining the app's features, addressing user feedback, and expanding its reach to serve more communities in need. By harnessing the power of technology and collaboration, the Food Share app stands poised to make a meaningful impact in reducing food waste and alleviating hunger.

Chapter 2: BACKGROUND

2.1. About the End Users

The end users for the food share donation project encompass a variety of roles, each with specific functionalities and needs:

a. Web (Admin):

The admin interface is primarily accessed through a web browser. Administrators are responsible for managing and overseeing the entire system. Their tasks may include:

- ➢ Managing user accounts and permissions.
- ➢ Monitoring donation and distribution processes.
- ➢ Analyzing data and generating reports.
- ➢ Configuring system settings and parameters.

b. Mobile:

Donor: Individuals or organizations who wish to donate food can use the mobile app to initiate and track their donations. Donors may perform tasks such as:

- ➢ Registering as a donor and providing necessary information.
- ➢ Scheduling donation pickups.
- ➢ Viewing donation history and receipts.

Volunteer: Volunteers play a crucial role in facilitating the collection and distribution of donated food. Their responsibilities may include:

- ➢ Registering as volunteers and specifying availability.
- ➢ Receiving notifications about donation pickups or distribution events.
- ➢ Updating the status of pickups or deliveries.

Farmer: Farmers who produce surplus food can use the mobile app to coordinate with the platform for donations. Their tasks may involve:

- Registering as farmers and providing details about their produce.
- Indicating availability for donation.
- Communicating with volunteers or administrators regarding pickup logistics. the farmer can date expired food collected to be used for farming.

Each end-user group has specific functionalities tailored to their role within the food share donation ecosystem, ensuring smooth operation and effective utilization of resources.

2.2. Understanding the solution

The Food Share app addresses surplus food management by helping its collection and distribution to those in need. It runs on a web interface for administration and a mobile platform for funders, volunteers, and farmers. The system is intended to effectively connect surplus food sources with beneficiaries, reducing food waste and combating food insecurity. Here's a breakdown of its main components.

Web Interface (Admin):

Administrators control the whole system via a web browser. They handle user accounts, oversee contribution and allocation procedures, analyze data, and configure system settings.

Mobile Platform:

People or organizations may contribute food using the smartphone app. They may examine contribution history and receipts, as well as schedule pickups. Facilitate the collecting and delivery of donated food, get information about pickups or distribution events, and track the status of deliveries. Coordinate surplus food

contributions using the app by registering, providing produce information, indicating availability, and communicating about collection logistics. The registration procedure includes user verification by the administrator, which grants authenticated access. After logging in, users may view role-specific dashboards. The software supports password management, profile changes, and account deactivation.

2.2.1. Overview of the system

The Food waste food management system is the surplus food collected by the distribution system. The food provider (Donor) and volunteers (received) can communicate to pick the food from the donor and goose to distribute to the poor and homeless people. Where the web is using the admin to control the system. The mobile user is a donor and volunteer where the donor can donate the available food and the volunteer can contract to receive the food from a donor.

The new user can register user details from mobile and admin goes to verify the user and give the authenticate access for using the system. After receiving the access, the user can log in to the food share app with, his/her selection role. The donor dashboard has all user's donated latest data. The donor can go to the post screen and new food is posted with all food details. The donor after donating then goes to check the view history with details. Then the donor can home page has multiple donated food view details with a location map and contract to the donor and received food and goes to distribute the food. After completing the distribution then view history with rating. The app has additional features such as forgetting passwords or changing passwords, permanent account deactivation, profile details update and more.

2.2.2. Technical Terms and Definition (Technical Terms related to the project)

To ensure understanding, technical terms related to the project should be defined. This section elucidates terms such as API, database management system, UI/UX, scalability,

framework, programming language, firebase push notification etc., providing readers with a comprehensive understanding of the technology and concepts underpinning the Food Share app.

2.2.3. Function and Features

a. Registration: Users register their details, which are verified by the admin.

b. Login: Authenticated users access the app's functionalities.

c. Forgot/Reset Password: Allows users to recover or reset forgotten passwords.

d. Food Donation: Enables donors to post surplus food details for donation.

e. View Food Details: Provides comprehensive information about available food items.

f. View Donations Location: Displays the location of donation pickups.

g. View Profile: Users can access and update their profile information.

h. Account Deactivation: Allows users to permanently deactivate their accounts.

These functions and features ensure a seamless user experience, facilitating efficient surplus food management and distribution while promoting user engagement and accountability.

2.3. Comparison

The food here system is so many available in different countries in different platforms. Where the similar projects to some features are different in food share applications.

2.3.1. Similar Projects

a. Flashfoods

Author: local government bodies, NGOs,

Flashfoods is a mobile application that connects users with surplus food from local restaurants and grocery stores at discounted prices. Users can browse available food items, purchase them directly through the app, and pick them up from designated locations. Flashfoods aims to reduce food waste by offering discounted surplus food to consumers while providing additional revenue streams for businesses. Flashfood gives unbeatable deals on groceries at peak deliciousness. This application provides the save big on fruit, vegetables, meat, milk, cheese, pantry staples and more but is not fully free distributed. (local government bodies, 2024)
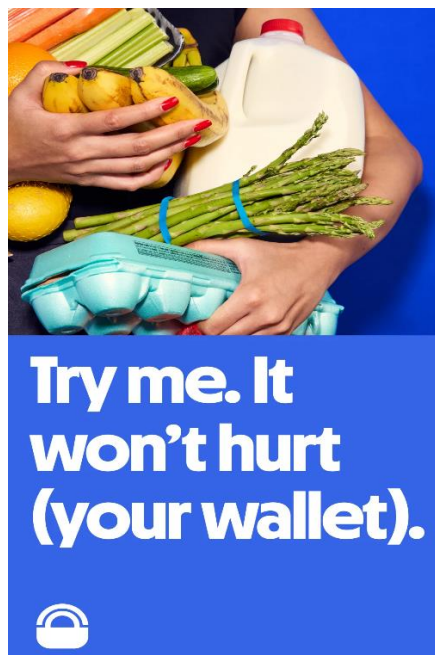

Figure 1: Flash floods similar app image

b. Food Rescue

Author: Dave Lampert, Melissa Spiesman, Jeff Schacher and Kevin Mullins

Jeff Schacher and Kevin Mullins founded Food Rescue as Community Plates in Fairfield County in 2011, in response to serious concerns about food insecurity and waste. The system's main goals were to reduce food waste and provide meals to people in need. This innovative approach garnered widespread support from volunteers, food donors, and social service organizations. Over time, they expanded and eventually renamed the nonprofit Food Rescue. It reduces food waste by enabling food donors to donate their surplus food to social service agencies. It also provides meals to those facing food insecurity by allowing social service agencies to join and receive food. To collect and share surplus food seven days a week, and there is no cost to the food donor or the recipient. (Dave Lampert, Now Fair Food NZ, 2024)

Figure 2. Food Rescue similar project image

c. No Food Waste

Author: Anne Frank

"No Food Waste" also collaborates with businesses, schools, and government agencies to implement strategies for reducing food waste in various settings. This includes initiatives such as food rescue programs, composting initiatives, and policy advocacy for standardized date labelling and food donation regulations. That aims to foster a culture of mindfulness and responsibility towards food consumption, ultimately contributing to a more sustainable and resilient food system. Through collective efforts and partnerships, the program seeks to minimize food waste and maximize the utilization of resources, ensuring that everyone has access to nutritious food while reducing the environmental impact of food production and disposal. (Dave Lampert, Food Reduces, 2024)

Figure 3: No Food Waste similar projects image.

2.3.2. Comparisons (Comparing the features and critical evaluation of the solution)

Features	Flashfood	Food Rescue	No Food Waste	Food Share
Food Post/Donation	Yes	Yes	Yes	Yes
View Location on Google Map	Yes	Yes	No	Yes
Push Notification	Yes	Yes	Yes	Yes
Local Notification	No	No	No	Yes
Email Notification for Distributed Message	Yes	Yes	Yes	Yes
Donation complaint for administration	No	Yes	Yes	Yes
Rating	No	No	No	Yes
User View History	No	No	No	Yes

when comparing the features of Flashfood, Food Rescue, No Food Waste, and my system "Food Share", find that all platforms support basic functionalities like food posting and donation, as well as push notifications. However, Food Share distinguishes itself with additional features such as local notifications, donation complaint functionality, rating, and user view history. Flashfood lacks donation-compliant capabilities, while No Food Waste does not offer location viewing on Google Maps. Food Rescue lacks a rating feature and user view history. Overall, Food Share provides a more comprehensive set of features, enhancing user experience and administrative capabilities.

Chapter 3: DEVELOPMENT

3.1. Methodology

3.1.1. Considered Methodologies

3.1.2. Justification for Not Selected Methodologies

3.1.3. Justification for Selected Methodology

3.2. Survey Result

3.2.1. Pre-Survey Results

3.2.2. Post-Survey Results

3.3. Requirement Analysis

3.4. Design (Concerning methodology what are the core design techniques. For eg: If the methodology is USDP, UML diagrams are a must)
3.5. Implementation

3.5.1. System Development (Important screenshots of development core features and architecture)

3.5.2. System Architecture

CHAPTER 4: TESTING AND ANALYSIS

4.1. Test Plan

4.1.1. Unit Testing

4.1.2. System Testing

4.2. Test Execution

4.2.1. Unit Testing

4.2.2. System Testing

4.3. Critical Analysis

CHAPTER 5: CONCLUSION

5.1. LEGAL, SOCIAL AND ETHICAL ISSUES

5.1.1. LEGAL ISSUES

5.1.2. SOCIAL ISSUES

5.1.3. ETHICAL ISSUES

5.2. ADVANTAGES

5.4. LIMITATIONS

5.3. FUTURE WORK

CHAPTER 6: References

CHAPTER 7: Appendix