

# Design, Development and Usability Evaluation of Foodiediary: A Web-Based User-Generated Recipe Sharing System for Budget-Constrained Students

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## ABSTRACT

Currently, many cooking enthusiasts, especially ones who live in hostels or on a budget, struggle with disorganized recipes and lack a centralized, user-friendly platform to achieve and share their recipes. They also struggle a lot in finding ideas to cook and thus will lead to stress due to lack of ideas and inspiration for their dish. Also, many existing platforms lack structured usability evaluation and user-generated content validation, especially among student users. To address this issue, FoodieDiary, a comprehensive web-based recipe management system, is developed. The research and development process involved utilizing a modern tech stack – including HTML, CSS, PHP and JavaScript for interface and functionality, alongside a database using phpMyAdmin for secure data storage. The system is designed to allow users to create, store, like, and share simple recipes. The output is a functional, responsive website that streamlines the digital cookbook experience while providing users with community-driven sources of culinary inspiration. The testing result shows 100% of test modules have passed the Unit Testing, while result for User Acceptance Test (UAT) are varied, but still majority of the feedback are happy with the sharing recipe platform.

**Keywords-** Web-based Community; Design Usability Study; Context Diagram; Data Flow Diagram (DFD); Recipe for Budget-constrained Student;

## INTRODUCTION

The rapid growth of web-based technologies has significantly transformed the way people share information and interact in online environments. Web-based platforms enable users to create, modify, and exchange content easily, leading to the emergence of user-generated content (UGC) communities. These platforms allow users to share knowledge, experiences, and opinions, making them an important medium for communication and collaboration in modern digital society. Recent studies have highlighted that online communities supported by web-based applications play a crucial role in increasing user engagement and knowledge sharing, particularly in lifestyle-related domains such as cooking, health, and education.

Web-based applications have become central to modern lifestyle management. From petrochemical support (Ruiz & Moscardelli, 2023; Srikritsanarat & Kwonpongsagoon, 2020) to medical and health monitoring (Akrungsri, et al., 2024; Chrysi, et al., 2023; Lazar, et al., 2023; Rana, et al., 2025), digital platforms provide structured solutions for organizing daily activities. In the culinary domain, many platforms emphasize commercial food ordering or advanced recipe collections (Ashton, 2021; Mateo, 2024; Overby, 2025). However, limited attention has been given to systems designed specifically for students who require simple, affordable, and easily accessible meal preparation guidance.

Students residing in hostels often face spatial limitations, restricted cooking equipment, and budget constraints. These factors reduce their ability to experiment with complex recipes and increase dependency on processed or

fast food. Additionally, personal recipe organization is frequently fragmented across notebooks, screenshots, and multiple websites. The absence of a centralized digital system tailored to simplified cooking motivates the development of FoodieDiary.

In recent years, online recipe-sharing platforms have become increasingly popular as users seek convenient ways to exchange cooking ideas and food preparation methods. Many existing platforms allow users to upload and browse recipes; however, several limitations still exist, such as lack of structured organization, limited user interaction features, and insufficient usability evaluation. These limitations may reduce user satisfaction and discourage continuous participation, especially among new users or students who require simple and user-friendly interfaces.

Although various web-based recipe applications have been developed, previous studies have shown that many systems are designed without proper usability evaluation and user-centered design considerations. In addition, limited research focuses on the development of recipe-sharing platforms specifically designed for student users, where simplicity, accessibility, and interaction features are essential. Therefore, there is a need to develop a web-based recipe-sharing system that emphasizes user-generated content, usability, and user satisfaction.

Therefore, this study aims to design and develop a web-based recipe-sharing platform called FoodieDiary that allows users to upload, manage, and share recipes using a user-generated content approach. The system is developed using a structured software development method and evaluated through usability testing to ensure that it meets user requirements.

The main contribution of this study is the development and evaluation of a simple and user-friendly recipe-sharing platform that supports user interaction and improves engagement among student users.

The overall workflow of the proposed system is illustrated in Figure 1.



Fig. 1 Workflow of the proposed system

The remainder of this paper is organized as follows. Section II presents the literature review related to user-generated content, web-based systems, and usability evaluation. Section III describes the methodology used in the development of the system. Section IV explains the system design and implementation. Section V presents the results and discussion, and Section VI concludes the study with recommendations for future work.

## Related Work

This section reviews previous studies related to user-generated content, web-based applications, and usability evaluation that are relevant to the development of the FoodieDiary system. The review focuses on how online platforms support user interaction, how recipe-sharing systems are designed, and how usability affects user satisfaction. Understanding these aspects is important to ensure that the proposed system is developed based on established concepts and supported by previous research findings.

### A. Web-Based Information Systems and Community Platforms

Web-based applications are widely used to provide information and facilitate communication among users. In the context of cooking and food preparation, recipe-sharing platforms allow users to upload, browse, and manage cooking instructions easily through an online interface. Several existing systems have been developed to support recipe sharing; however, some of these systems lack interactive features, proper organization, and usability

evaluation. Without user-friendly design and effective interaction functions, users may experience difficulties when navigating the system, which can reduce their interest in using the platform continuously.

Web-based information systems have evolved into scalable, interactive environments that support user-generated content, social interaction, and collaborative knowledge sharing (Ivanova & Klushina, 2021; Schuster et al., 2021; Sidorov et al., 2025). From a systems engineering perspective, such platforms integrate front-end presentation layers with server-side processing and relational databases to ensure persistence, security, and performance. The architectural model adopted in FoodieDiary aligns with the conventional three-tier web architecture (presentation, application, and data layers), which has been widely recognized for its modularity and maintainability (Kazemi et al., 2024).

User-generated content (UGC) refers to any form of content created and shared by users through online platforms, including text, images, videos, and reviews. UGC has become an essential component of modern web applications because it encourages participation, collaboration, and knowledge sharing among users. Previous studies have shown that platforms that support user-generated content can increase user engagement and improve user satisfaction because users feel more involved in the system. In online communities, the ability to share experiences and opinions plays a significant role in maintaining active participation and continuous usage of the platform.

User-generated content (UGC) platforms, particularly in lifestyle domains such as food and cooking, rely heavily on participatory design principles and social interaction mechanisms. Research indicates that online communities thrive when platforms support contribution, feedback, and visibility of peer engagement (e.g., likes, comments, ratings) (Zhang et al., 2010). These interactive affordances enhance perceived usefulness and foster continued engagement, consistent with constructs from the Technology Acceptance Model (TAM) (Davis, 1989).

In the context of food-related platforms, digital communities have transformed recipe exchange from static cookbook formats into dynamic, socially mediated ecosystems. Studies in online food communities demonstrate that information quality, system quality, and social interaction significantly influence user satisfaction and continued usage intention (Hajli, 2015). Thus, integrating features such as recipe creation, commenting, rating, and liking in FoodieDiary reflects empirically supported design strategies for sustaining user participation.

## **B. Usability, User Experience (UX), and Interface Design**

Usability is one of the most important factors in the development of web-based systems. A system with good usability allows users to complete tasks easily, efficiently, and with high satisfaction. According to human-computer interaction principles, usability includes aspects such as ease of use, learnability, efficiency, and user satisfaction. Previous studies have emphasized that usability testing is necessary to ensure that the developed system meets user requirements and functions as expected. Systems that are developed without usability evaluation may face problems such as user confusion, navigation difficulty, and low user acceptance.

Usability is a critical determinant of web application success. In recipe-sharing systems, clarity in form inputs (e.g., ingredient lists, preparation steps, image uploads) is essential to minimize user errors and enhance task completion rates. Research further indicates that responsive design—ensuring compatibility across devices—improves accessibility and perceived quality of web systems (Marcotte, 2010).

User evaluation is an important step in system development to determine whether the system meets user expectations. Evaluation methods such as questionnaires, usability testing, and user feedback are commonly used to measure user satisfaction and system effectiveness. Previous research has shown that user evaluation helps developers identify weaknesses in the system and improve the interface design. Therefore, usability evaluation is included in this study to ensure that the FoodieDiary system is easy to use and suitable for student users.

User Acceptance Testing (UAT), as applied in FoodieDiary, is consistent with established software validation methodologies (Tan, 2025). The Systematic execution of unit testing and UAT aligns with software quality assurance frameworks recommended in software engineering literature.

### C. Online Communities, Engagement, and Knowledge Sharing

Online knowledge-sharing communities depend on both intrinsic and extrinsic motivational factors. Social exchange theory suggests that users are more likely to contribute content when they perceive reciprocal benefits such as recognition or social capital (Blau, 1964). Empirical research on electronic word-of-mouth (eWOM) further confirms that visible engagement metrics (ratings, comments, likes) significantly enhance trust and influence behavioral intentions (Cheung & Thadani, 2012).

In food-centric platforms, community-based interactions contribute to culinary learning, creativity, and cultural exchange. Studies show that digital food communities facilitate informal learning environments where users collaboratively refine recipes and cooking techniques. Therefore, FoodieDiary's inclusion of community-driven features is consistent with research emphasizing participatory learning and peer-based knowledge dissemination.

University students frequently experience financial constraints that influence dietary behavior and food choices. Empirical research highlights that limited budgets often lead students to prioritize affordability and convenience over nutritional quality (Nelson et al., 2009). Digital interventions, including recipe platforms tailored to low-cost ingredients, have been suggested as practical tools for promoting cost-effective meal planning and healthier eating behaviors (Dollahite et al., 2014).

Technology-mediated food planning tools can reduce decision fatigue and stress associated with meal preparation, particularly among students managing academic workloads (Wansink & Sobal, 2007). By centralizing affordable, user-contributed recipes, FoodieDiary addresses an identified gap in accessible, student-focused culinary resources.

#### Proposed System

Based on the previous studies discussed above, it can be observed that many web-based platforms support user-generated content and online interaction. However, limited studies focus on the development of simple recipe-sharing systems that are specifically designed for student users and evaluated using usability testing. In addition, some existing systems lack proper user interface design and structured evaluation. Therefore, this study aims to develop and evaluate a web-based recipe-sharing platform that emphasizes user-generated content, usability, and user satisfaction.

This section explains the analysis of FoodieDiary on understanding how the system will work and how users will interact with it. It examines the problems users face when finding and preparing simple, affordable meals and identifies the features needed to address these issues.

Figure 1(a) and Figure 1(b) shows the Decomposition Chart for Registered User and Admin accordingly.

Relational database management systems (RDBMS), such as MySQL, remain foundational technologies for structured data storage in web applications.

Data Flow Diagrams (DFDs) and context diagrams are classical system modeling tools used in structured analysis and design. They facilitate visualization of data movement between external entities, processes, and data stores (Yourdon, 1989). The use of DFDs in FoodieDiary supports transparent documentation of system interactions, particularly between users, administrators, and backend databases.

To clearly represent the system's processes and data flow, visual tools such as the Data Flow Diagram (DFD) context diagram and flowcharts are used. These diagrams help illustrate how information moves through the system, how users interact with different features, and how the system processes requests like browsing, sharing, and organizing recipes. This analysis ensures that the design of FoodieDiary meets user needs effectively and supports smooth, practical functionality.

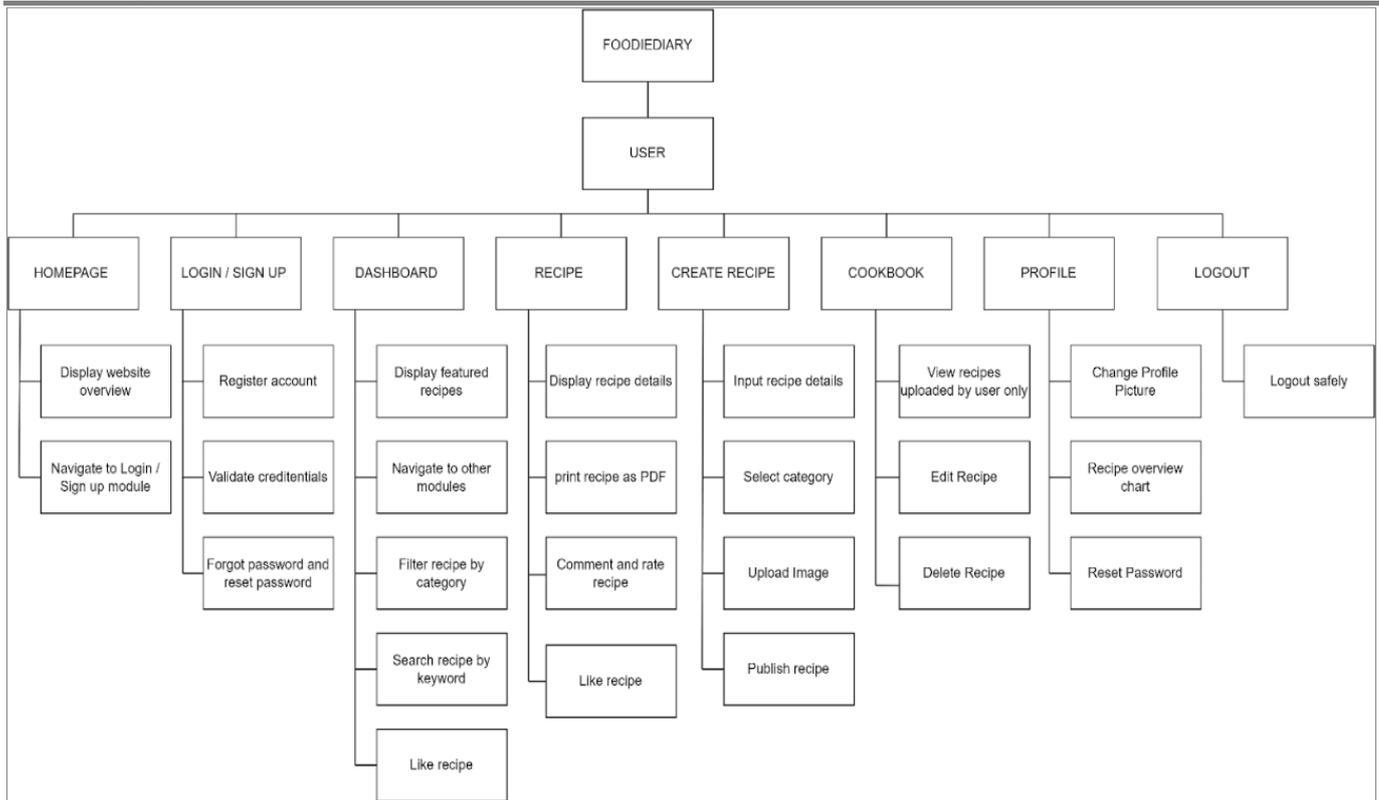


Fig. 1(a) Decomposition Chart for Registered User

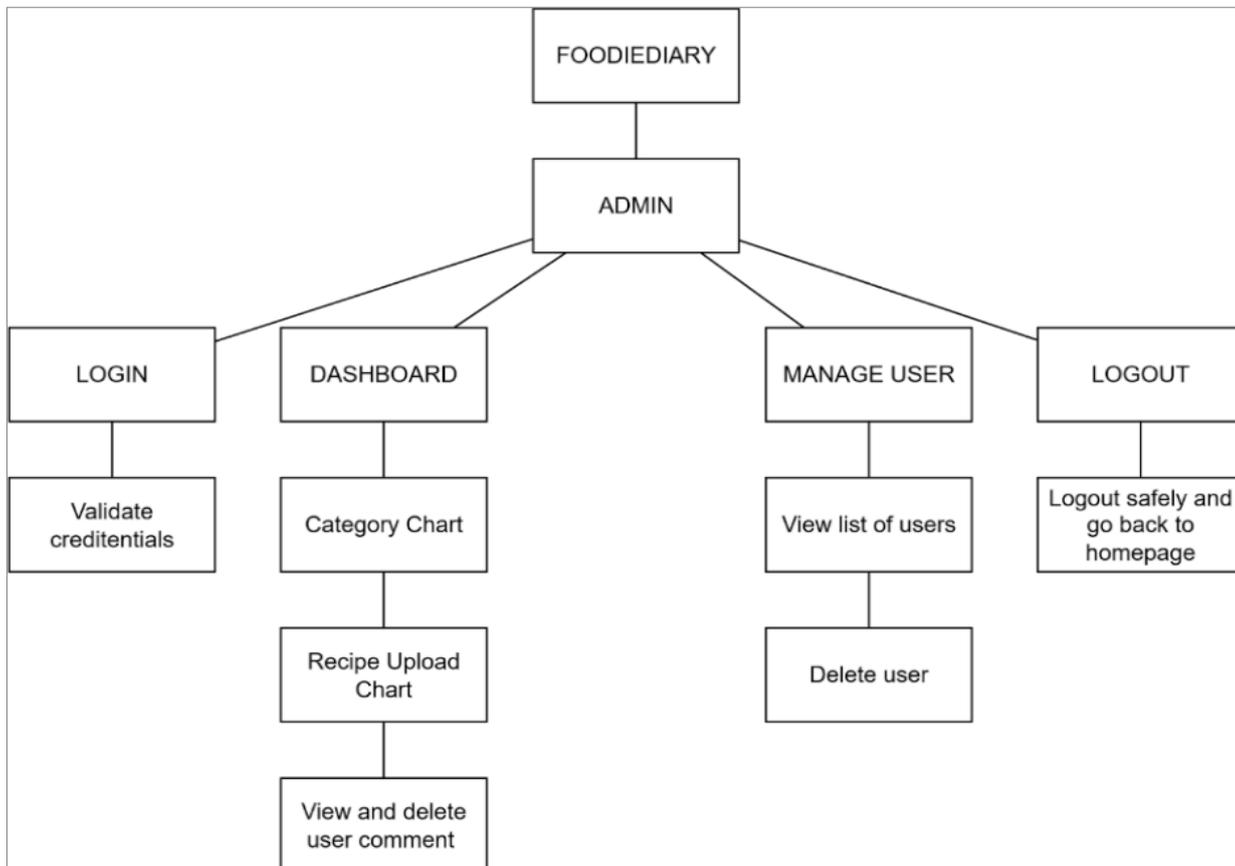


Fig. 1(b) Decomposition Chart for Admin

Although recipe-sharing platforms are common, research focusing on simplified student-oriented recipe systems with integrated administrative governance remains limited. FoodieDiary contributes to this niche by combining structured relational database modeling with community interaction features.

Figure 2 and Figure 3 respectively shows the Context Diagram and Data Flow Diagram (DFD).

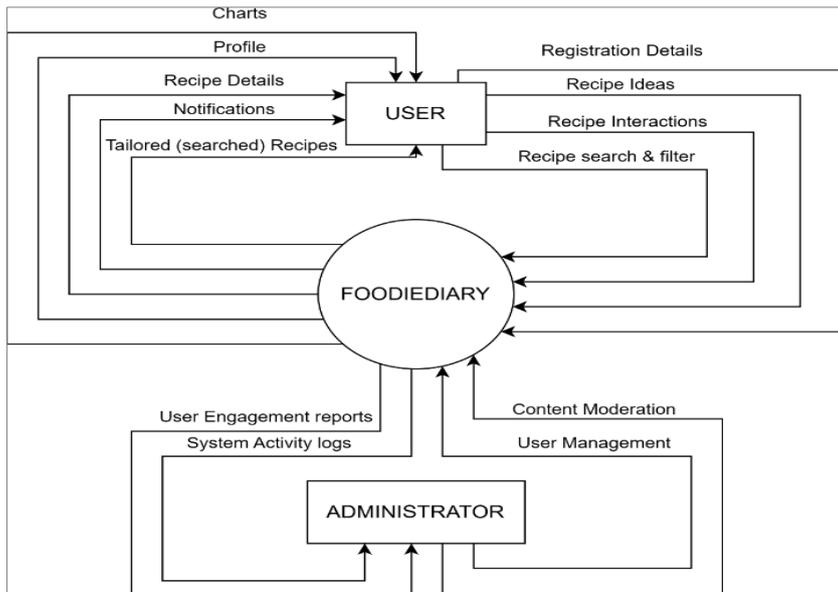


Fig. 2 Context Diagram

## METHODOLOGY

### A. Research Design

This study uses a system development research approach to design and evaluate a web-based recipe-sharing platform called FoodieDiary. The research focuses on the development of a functional system followed by usability evaluation to determine whether the system meets user requirements. The development process involves requirement analysis, system design, implementation, and testing. After the system is completed, usability evaluation is conducted using user feedback to measure the effectiveness and user satisfaction of the system.

The system is developed using the Software Development Life Cycle (SDLC) model. SDLC is chosen because it provides a structured approach for developing software systems. The phases involved in this study include requirement analysis, system design, implementation, testing, and evaluation. During the requirement analysis phase, user needs are identified. In the design phase, system architecture and database structure are created. The implementation phase involves coding using web technologies. Finally, testing and evaluation are conducted to ensure the system functions correctly and is easy to use.

The architecture of the FoodieDiary system consists of three main components, which are the user interface, application logic, and database. Users interact with the system through the web interface to upload recipes, view recipes, and manage their accounts. The application logic processes user requests and communicates with the database to store and retrieve information. The database is used to store user data, recipe details, and comments. This architecture ensures that the system can manage user-generated content efficiently.

The system is implemented using web-based technologies. The front-end interface is developed using HTML, CSS, and JavaScript, while the back-end is developed using PHP. MySQL is used as the database to store user and recipe information. The system is developed using XAMPP as the local server environment. These tools are selected because they are widely used for web application development and support efficient system implementation.

After the system development is completed, usability evaluation is conducted to measure user satisfaction and system effectiveness. The evaluation is carried out using a questionnaire given to several users who tested the system. The questionnaire consists of several questions related to ease of use, interface design, functionality, and overall satisfaction. A Likert scale is used to measure user responses ranging from strongly disagree to strongly

agree. The data collected are analyzed to determine whether the system meets user expectations and can be used effectively. A total of 6 users participated in the usability testing.

The collected data are analyzed using descriptive statistics to calculate the percentage of user satisfaction for each question. The results are presented in table form to show the overall usability of the system.

### B. Software Requirements

The software requirements consist of the programs and tools used to design, develop, and test the system. The list of software used in this project includes:

- Operating system: Windows 10 or higher — stable and supports most web development tools.
- Text Editor: Visual Studio Code — chosen for its user-friendly interface and powerful extensions for HTML, CSS, JavaScript, and PHP.
- Programming Languages: HTML and CSS for web design, Javascript for interactivity, and PHP for server-side programming.
- Database Management Tool: phpMyAdmin (with MySQL) — used to create and manage the database easily through a web interface.
- Design Tool: Visily — for creating and testing UI/UX prototypes before actual coding.
- Web Browser: Google Chrome — user to preview and test the website during development.

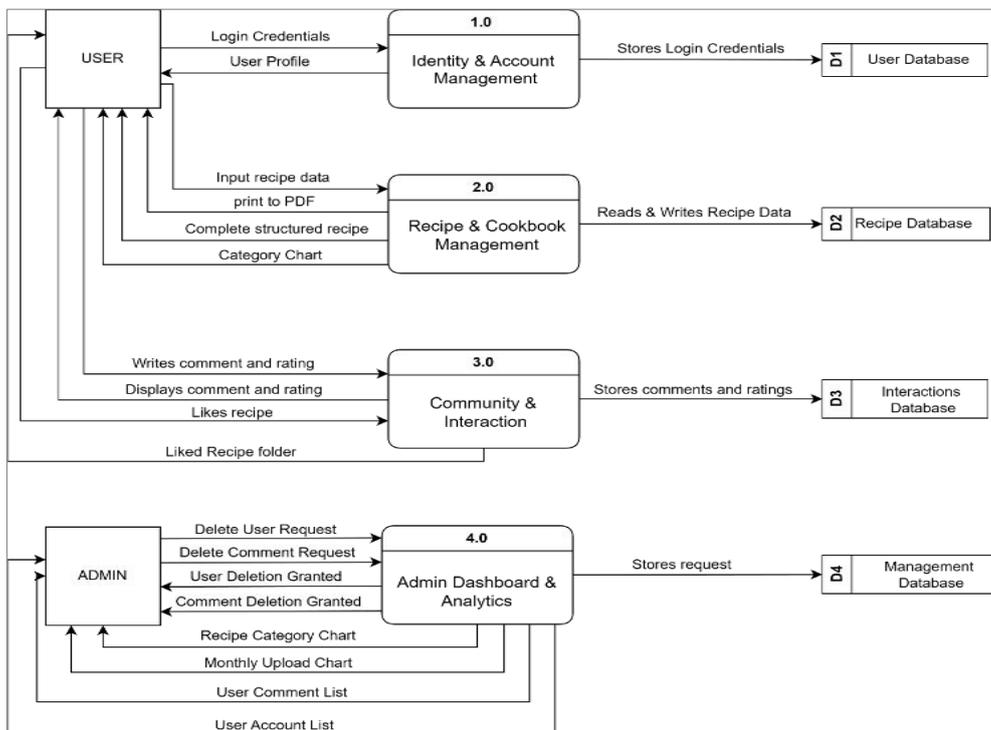


Fig. 3 Data Flow Diagram (DFD)

The database is designed to store user information and recipe data. MySQL is used as the database management system. The database consists of several tables, including user table, recipe table, and comment table. Each table is connected using primary key and foreign key relationships to ensure data consistency.

## C. Hardware Requirements

The hardware requirements refer to the physical devices needed to run the software tools and test the system. The minimum specifications used for FoodieDiary development are:

- a) Processor: Intel Core i5 or equivalent
- b) Memory (RAM): Minimum 8GB
- c) Storage: At least 256GB SSD or HDD
- d) Internet Connection: Stable broadband connection

## System Designs & Implementation

This section describes the design and implementation of the FoodieDiary system. The system is developed as a web-based application that allows users to upload, view, and manage recipes using a user-generated content approach. The system consists of several main modules, including user login, recipe management, user management, and database storage. Each module is designed to ensure that users can interact with the system easily and efficiently.

### A. Graphical User Interface Design (GUI)

The user interface is designed to be simple and user-friendly so that users can easily navigate the system. The main page provides options for users to log in, register, and browse recipes. A clear layout and simple navigation menu are used to improve usability and reduce user confusion. The interface design follows basic usability principles to ensure that users can complete tasks with minimal effort.

- 1) Homepage – Appear when user assesses the FoodieDiary website (Figure 4).

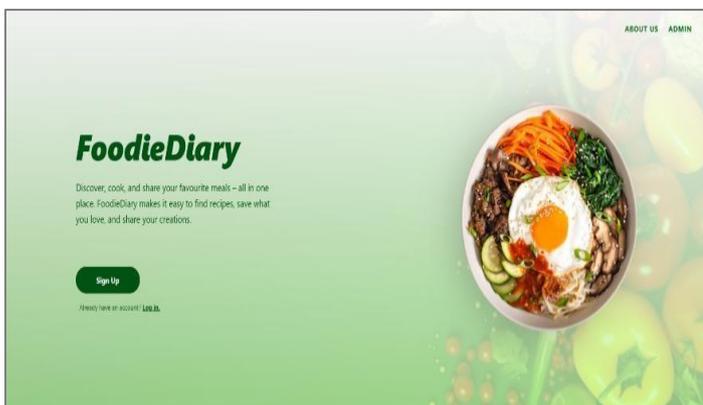


Fig. 4 GUI for Homepage

- 2) User Sign Up – Appear when the sign-up button from the home page is clicked (Figure 5).

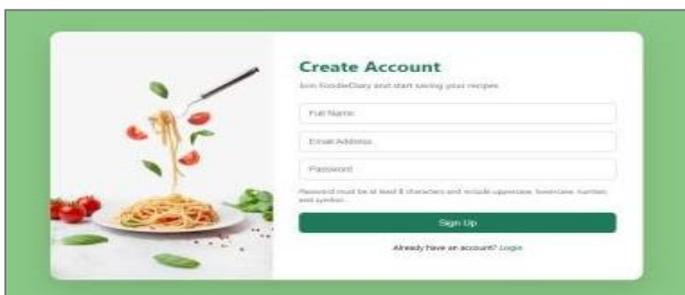


Fig. 5 GUI for User Sign Up

3) User Login – Appear when login button from homepage is clicked/ login link at the sign-up page is clicked (Figure 6).

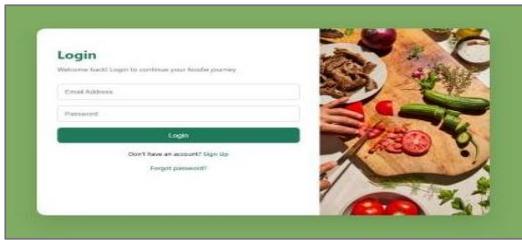


Fig. 6 GUI for User Login

4) User Profile – Appear when the Profile button on the left sidebar is clicked (Figure 7).



Fig. 7 GUI for User Profile

5) Dashboard – Appear when user is successfully logging in (Figure 8).

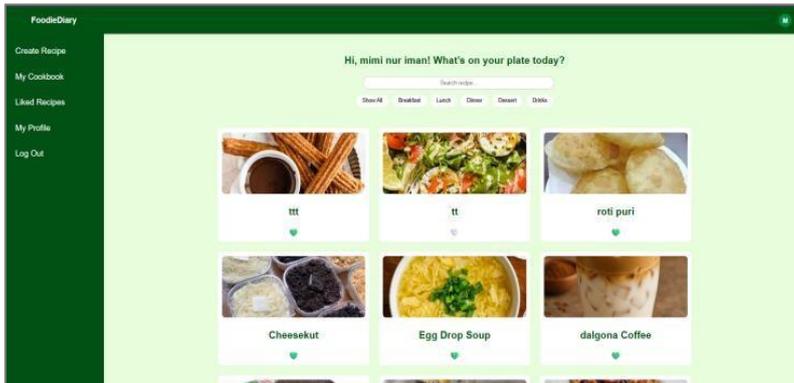


Fig. 8 GUI for Dashboard

6) User Create Recipe – Appear when the Create Recipe button on the left sidebar is clicked (Figure 9).

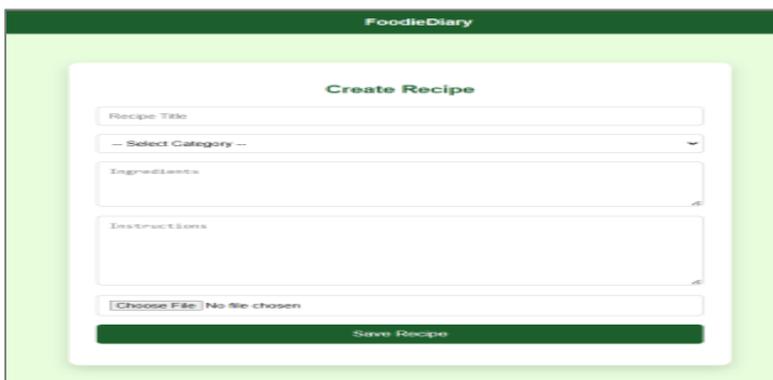


Fig. 9 GUI for User Create Recipe

7) User Cookbook – Appear when the Cookbook button on the left sidebar is clicked (Figure 10).



Fig. 10 GUI for User Cookbook

8) User Liked Recipe – Appear when the love symbol on recipes at dashboard is clicked (Figure 11a and Figure 11b).

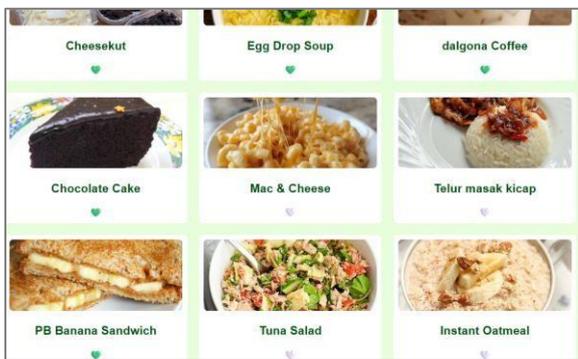


Fig. 11(a) GUI for love symbol on recipe at dashboard is clicked

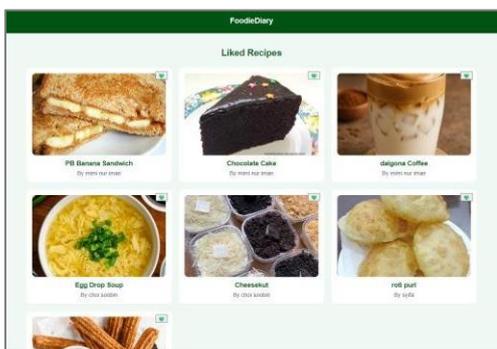


Fig. 11(b) GUI for User Liked Recipe

9) Admin- Login – Appear when the user clicks the admin top-link on the top-link of Homepage (Figure 12).



Fig. 12 GUI for Admin Login

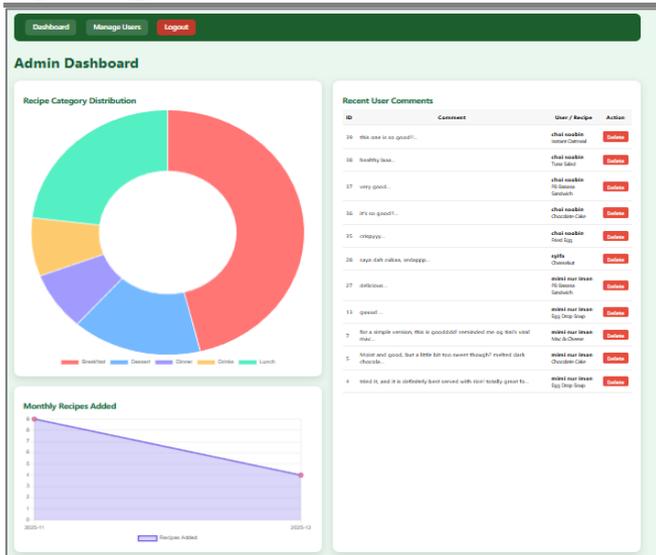


Fig. 13 GUI for Admin Dashboard

10) Admin- Dashboard – Appear when the user accesses the admin login with correct credentials (Figure 13).

11) Admin- User Management– Appear when user succeed logging into the admin-side system and is at the dashboard (Figure 14).



Fig. 14 GUI for User Management for Admin

12) User/Admin Logout Button – Logout button on the left sidebar (Figure 15).



Fig. 15 GUI for User/Admin Logout Button

The implementation of these modules ensures that the system functions correctly and supports user interaction effectively. The design focuses on simplicity and usability to make the system suitable for student users.

## System Testing

Software reliability is closely linked to systematic testing strategies. Testing methodologies including unit testing, system testing, and User Acceptance Testing (UAT) are essential to validate system reliability before deployment.

### A. Unit Testing

Unit testing ensures individual modules function according to specifications, while system testing verifies integration across components. Empirical studies confirm that structured testing protocols significantly decrease defect density and improve maintainability (Nagappan et al., 2008).

Each module is tested individually to ensure every feature works as intended. The tests are as follows:

### 1) User Sign Up

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC01	User Sign Up	Fill in the field warning	Pass
		Add '@gmail' warning	Pass
		Passwords must exceed 8 words with lower case, upper case, and symbol	Pass
		Welcome new user notification pops up	Pass

### 2) User Login

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC02	User Login	Fill in the field warning	Pass
		Add '@gmail' warning	Pass
		"Incorrect Password" warning when wrong input	Pass
		Navigate to User Dashboard if succeed logging in.	Pass

### 3) User Dashboard

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC03	User Dashboard	All recipes are displayed	Pass
		Search by keyword bar can search recipes by keyword	Pass
		Can comment and rate recipes	Pass
		Able to like recipes	Pass

### 4) Create Recipe

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC04	Create Recipe	Able to fill in all the fields in the form	Pass
		Able to choose category of recipe	Pass
		Able to upload images	Pass
		Able to save recipe and make it display on the dashboard and cookbook page	Pass

**5) Cookbook**

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC05	Cookbook	Able to retrieve recipe from create recipe	Pass
		Able to edit recipe	Pass
		Able to delete recipe	Pass

**6) Liked Recipe**

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC06	Liked Recipe	Like button functions	Pass
		Liked recipes are stored at Liked Recipe Page	Pass
		Recipes can be viewed in detailed	Pass

**11) Admin – Manage User**

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC11	Admin Manage User	User details are displayed	Pass
		Able to manually delete the accounts by clicking delete button	Pass
		If user isn't active within 14 days, their account will be terminated and need to sign back up	Pass

**12) Admin Log Out**

Test Case ID	Unit/ Module	Expected Result	Result (Pass/Fail)
TC12	Admin log out	Able to navigate back to homepage	Pass

**B. User Acceptance Test (UAT)**

After the system was developed, usability testing was conducted to evaluate the effectiveness and user satisfaction of the FoodieDiary system. Several users were asked to test the system by performing tasks such as logging in, adding recipes, and viewing recipes. After using the system, the users were required to answer a questionnaire to measure their satisfaction with the system.

A total of 6 respondents participated in the usability testing. The respondents consisted of students who have experience using web-based applications.

The questionnaire used a five-point Likert scale ranging from strongly disagree to strongly agree to evaluate the usability of the system.

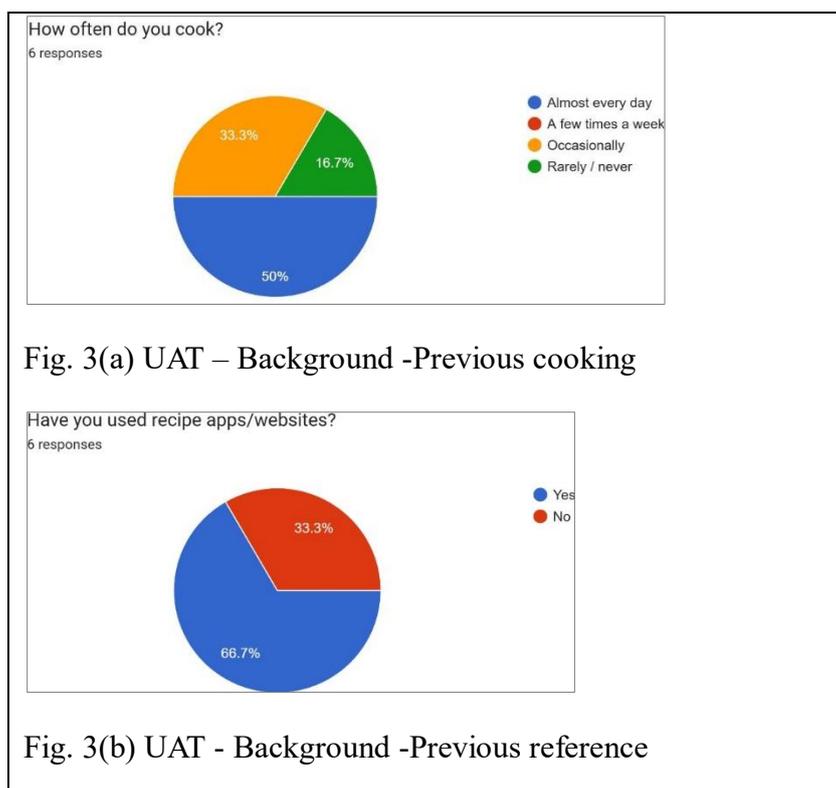
Some questions and responses from the UAT are presented in Table 1 which majority of responses give positive rating towards the system usability experience.

Table. 1 Questions and responses from UAT

No	Questions (Total responses)	1	2	3	4	5
1.	How easy was it to understand what FoodieDiary is about? (6)	-	-	-	2	4
2.	Is it easy to navigate to next page (sign up/ login/admin)? (4)	-	-	-	-	4
3.	How was easy it to create an account? (4)	-	-	-	-	4
4.	Does the ‘forgot password’ function work properly? (4)	-	-	-	2	2
5.	Is the dashboard easy to navigate? (6)	-	-	1	1	4
6.	Is the feedback (recipe rating, comment) section easy to use? (4)	-	-	-	1	3
7.	Is the ‘like recipe’s feature easy to use? (4)	-	-	-	-	4
8.	Is it easy to create recipes and add images? (4)	-	-	-	-	4
9.	Is the recipe overview easy to understand? (6)	-	-	1	2	3
10.	Are the dashboard charts easy to understand? (4)	-	-	-	-	4
11.	Is it easy to monitor and delete user account? (4)	-	-	-	1	3

While some other questions and responses from the UAT are presented in Figure 3(a) until Figure 3(n) which also majority of responses give positive rating towards the system usability experience.

Questions in Figure 3(a) and Figure 3(b) asked about user background or previous experience of using web-based recipe sharing platform.



Questions in Figure 3(c) until Figure 3(f) asked about users’ experience of using Sign up and Login page.

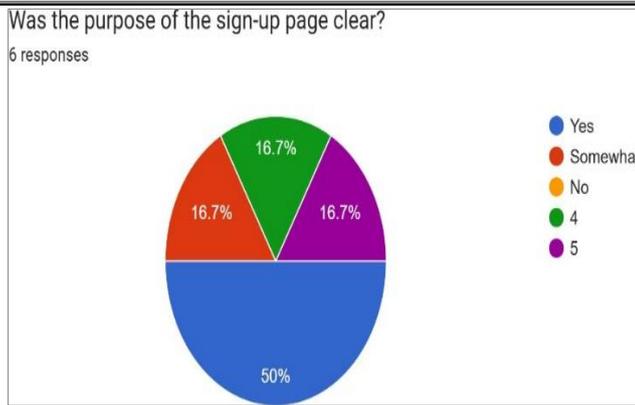


Fig. 3(c) UAT – Sign up Page

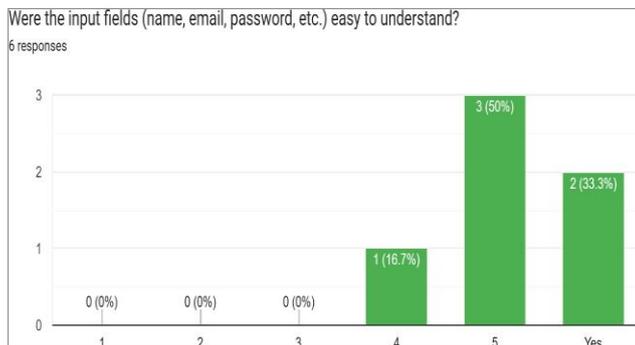


Fig. 3(d) UAT – Sign up – input fields

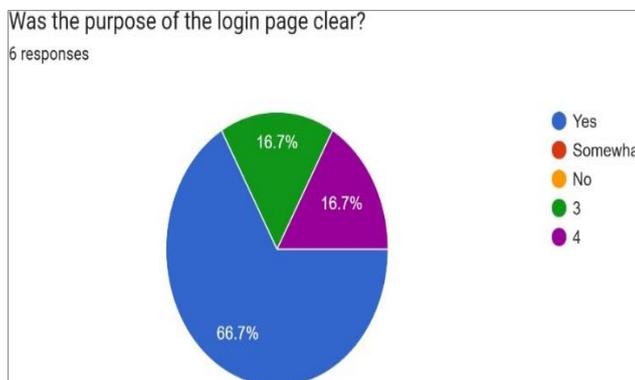


Fig. 3(e) UAT – Login page

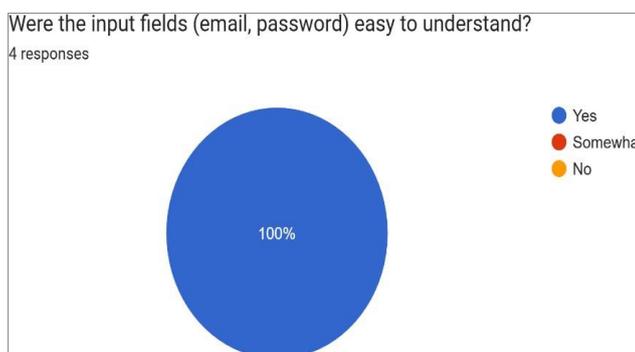


Fig. 3(f) UAT – Login - Input fields

Questions in Figure 3(g) until Figure 3(k) asked about users’ experience of content Recipe page.

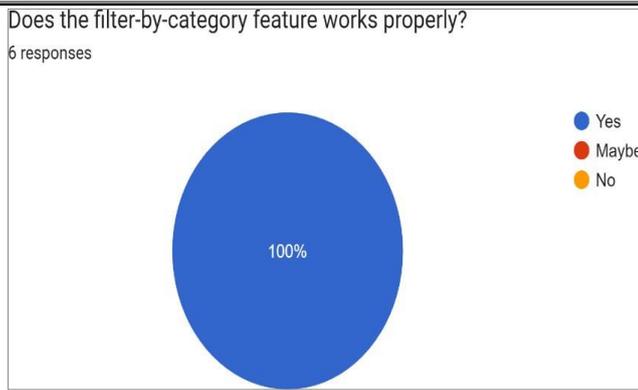


Fig. 3(g) UAT – Filter

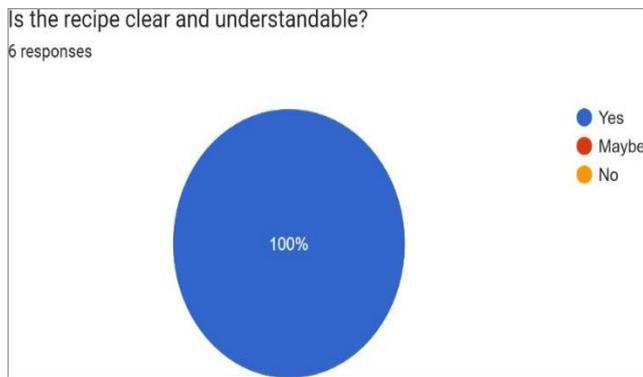


Fig. 3(h) UAT – Recipe content

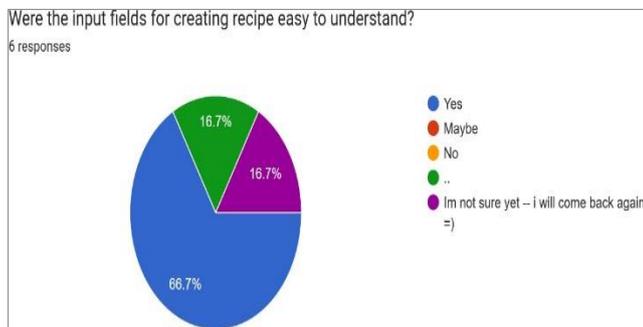


Fig. 3(i) UAT – Create Recipe

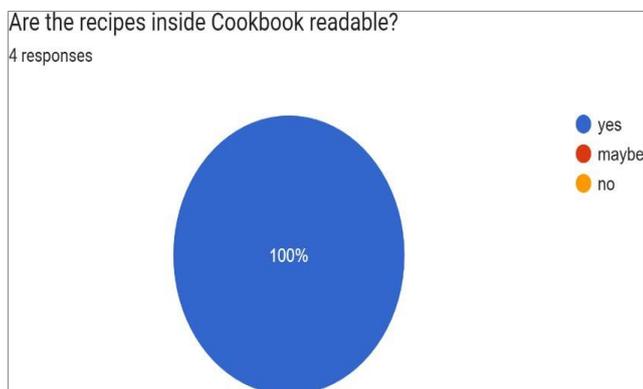


Fig. 3(j) UAT – Cookbook Recipe

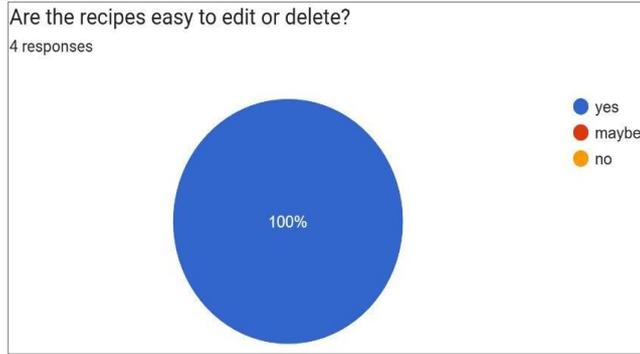


Fig. 3(k) UAT – Recipe easy to edit

Questions in Figure 3(l) until Figure 3(n) asked about users' experience of Profile page, color scheme and navigation of the pages in the system.

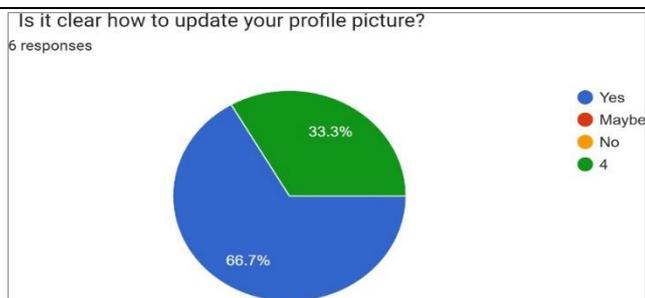


Fig. 3(l) UAT – Profile Page

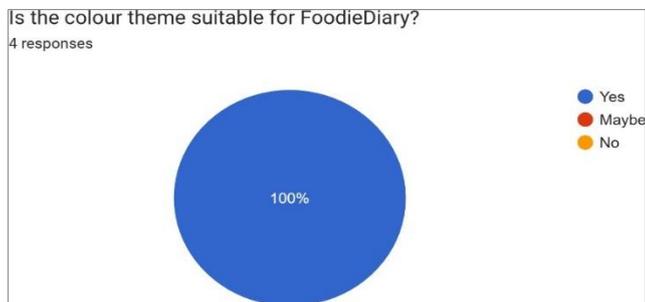


Fig. 3(m) UAT – Color scheme

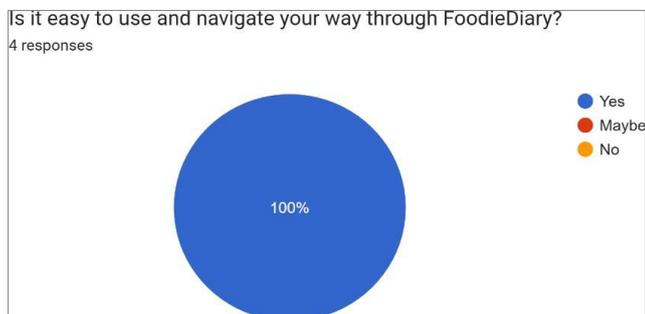


Fig. 3s(n) UAT – Navigation

## FINDINGS & RESULTS

### A. Unit Testing

The unit testing results indicate that all system modules functioned correctly according to their specified requirements.

A total of 40 test cases were executed across 12 user and administrator modules, and all achieved a 100% pass rate with no recorded failures. This confirms that the developed web-based community recipe sharing system is functionally stable and reliable at the unit level prior to further testing stages.

The details of the test module can be found in Table 2 and Figure 4.

## CONCLUSION, SIGNIFICANCE AND FUTURE WORK

The results of the usability evaluation show that the FoodieDiary system is easy to use and suitable for users. This finding is consistent with previous studies which stated that usability is an important factor in web-based applications. A simple interface and clear navigation can increase user satisfaction and encourage continuous usage. The use of user-generated content also helps users feel more involved in the system, which can improve engagement.

### A. Conclusion

FoodieDiary has successfully fulfilled its primary objectives by providing a comprehensive platform for users to upload, share, and explore recipes. The system allows users to register, upload recipes, browse existing recipes from other users, and access statistical insights through interactive dashboards.

Table. 2 Test Module with Percentage of Pass Value

Test Module	No. of Pass (%)	No. of Fail (%)	No. of Test (%)
TC01 - User Sign Up	4 (100%)	0 (0%)	4 (100%)
TC02 - User Login	4 (100%)	0 (0%)	4 (100%)
TC03 - User Dashboard	4 (100%)	0 (0%)	4 (100%)
TC04 - Create Recipe	4 (100%)	0 (0%)	4 (100%)
TC05 - Cookbook	3 (100%)	0 (0%)	3 (100%)
TC06 – Liked Recipe	3 (100%)	0 (0%)	3 (100%)
TC07 – User Profile	5 (100%)	0 (0%)	5 (100%)
TC08 - User Log out	1 (100%)	0 (0%)	1 (100%)
TC09 – Admin Login	3 (100%)	0 (0%)	3 (100%)
TC10 – Admin Dashboard	5 (100%)	0 (0%)	5 (100%)
TC11 – Admin Manage User	3 (100%)	0 (0%)	3 (100%)
TC12 – Admin Log Out	1 (100%)	0 (0%)	1 (100%)
<b>TOTAL</b>	<b>40 (100 %)</b>	<b>0 (0%)</b>	<b>40 (100%)</b>

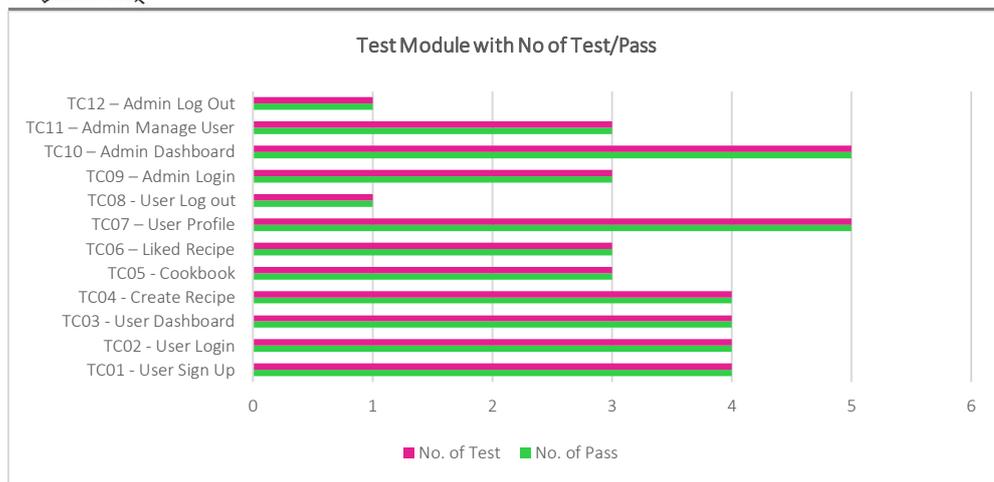


Fig. 4 Test Module with No of Pass/Test

By combining PHP for back- end development, MySQL for database management, while HTML, CSS, and JavaScript for front-end design, the project shows the effective integration of web technologies to create a functional, user-friendly, and visually appealing website.

The 100% pass rate reported in FoodieDiary’s unit tests suggests functional stability at the module level. The implemented features ensure that users can manage and discover recipes efficiently, fulfilling the project’s main goal of simplifying recipe management for cooking enthusiasts.

Overall, the evaluation result shows that the developed system can be used effectively and meets the objectives of the study.

During the development process, several challenges were encountered, including ensuring responsive design across various devices, optimizing database queries for performance, and maintaining smooth integration between the front-end and back-end components.

Overcoming these challenges enhanced technical skills in web development, problem-solving, and system design. In addition, the project provided valuable experience in planning, implementing, and testing a complete web application, highlighting the importance of careful design and iterative development to achieve a reliable and functional system.

## B. Significance

Beyond technical achievements, FoodieDiary reflects the significance of technology in connecting communities and enhancing everyday activities such as cooking. The project demonstrates the potential for web applications to facilitate knowledge sharing, engagement, and convenience for users. Overall, FoodieDiary not only achieves its intended functionality but also provides insights and learning experiences that can guide the development of more advanced digital solutions in the future.

This study contributes to two primary aspects:

- It presents the design and implementation of a web-based community recipe sharing system tailored for financially constrained university students.
- It provides empirical usability evidence supporting the feasibility of community-based digital food platforms in higher education contexts.

## C. Future Work

Although FoodieDiary successfully implements its core functions, several enhancements could make the platform more engaging and user-friendly. One key improvement is the integration of AI-based recipe

recommendations, which would analyse user preferences and browsing history to suggest personalized recipes. This feature would make recipe discovery faster and more enjoyable, increasing user interaction and satisfaction.

Another area for improvement is social media integration and mobile accessibility. Allowing users to share recipes on platforms like Facebook or Instagram would help expand the community and promote the application organically. Developing a mobile app version would further enhance accessibility, enabling users to browse, upload, and manage recipes conveniently on their smartphones or tablets.

Finally, advanced search options and multi-language support could improve usability and inclusivity. Users could filter recipes by ingredients, cuisine type, dietary restrictions, or preparation time, making the platform more efficient for diverse needs. Supporting multiple languages would allow a wider audience to engage with FoodieDiary, enhancing its potential for growth and long-term relevance in the digital recipe management space.

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## REFERENCES

1. Akungsri K., Chomphuthan T., Janthong V., Yaembangyang W., Saiyuan W., Songmuang P., Weight Loss Recommendation System, (2024) International Conference on Cybernetics and Innovations, ICCI 2024. DOI: 10.1109/ICCI60780.2024.10532468. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85195107770&doi=10.1109%2fICCI60780.2024.10532468&partnerID=40&md5=7c91936afeb57e2c0ade8196ba9e63c6>
2. Ashton L.M., Rollo M.E., Adam M., Burrows T., Shrewsbury V.A., Collins C.E., Process evaluation of the ‘no money no time’ healthy eating website promoted using social marketing principles. A case study, (2021) International Journal of Environmental Research and Public Health, 18 (7). DOI: 10.3390/ijerph18073589. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85103275442&doi=10.3390%2fijerph18073589&partnerID=40&md5=cb48ff262a14715bf046f4744cbd07fd>
3. Cheung, C. M. K., & Thadani, D. R. (2012). The impact of electronic word-of-mouth communication: A literature analysis and integrative model. *Decision Support Systems*, 54(1), 461–470. <https://doi.org/10.1016/j.dss.2012.06.008>
4. Chrysi M.S., Michopoulos I., Dimitriadis G., Peppas M., A modern web-based health promotion program for patients in Greece with diabetes 2 and obesity: an interventional study, (2023) *BMC Public Health*, 23 (1). DOI: 10.1186/s12889-023-15557-3. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85151714548&doi=10.1186%2fs12889-023-15557-3&partnerID=40&md5=bb14e54f60cb01acbf4e451c57e210b5>
5. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
6. Dollahite, J., Pijai, E. I., Scott-Pierce, M., Parker, C., & Trochim, W. (2014). A randomized controlled trial of a community-based nutrition education program for low-income parents. *Journal of Nutrition Education and Behavior*, 46(2), 102–109. <https://doi.org/10.1016/j.jneb.2013.09.004>
7. Hajli, M. N. (2015). Social commerce constructs and consumer’s intention to buy. *International Journal of Information Management*, 35(2), 183–191. <https://doi.org/10.1016/j.ijinfomgt.2014.12.005>
8. Ivanova M.V., Klushina N.I., Russian language in modern web space: dynamic processes and development trends, (2021) *Russian Language Studies*, 19 (4), pp. 367 - 382. DOI: 10.22363/2618-8163-2021-19-4-367-382. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85121995253&doi=10.22363%2f2618-8163-2021-19-4-367-382&partnerID=40&md5=f2c575ed329de68ce342620706d24442>
9. Kazemi A., Boyd M., Choi F., Tai A.M.Y., Tsang V.W., To T., Kim J., Jang K., Shams F., Schreiter S., Cabanis M., Krausz R.M., Architecture and Development Framework for a Web-Based Risk Assessment and Management Platform Developed on WordPress to Address Opioid Overdose, (2024) *JMIR*

- Formative Research, 8. DOI: 10.2196/49759. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85191171308&doi=10.2196%2f49759&partnerID=40&md5=244b8d820b83f9470256dd1c083861b4>
10. Lazar D.E., Postolica R., Hanganu B., Mocanu V., Ioan B.G., Web-based nutrition: a useful resource for cancer patients? (2023) *Frontiers in Nutrition*, 10. DOI: 10.3389/fnut.2023.1134793. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85165045495&doi=10.3389%2ffnut.2023.1134793&partnerID=40&md5=ae45744a24d52aa0b90ed62fbfdd2cff>
  11. Marcotte, E. (2010). Responsive web design. *A List Apart*, 306. <https://doi.org/10.1145/1941487.1941504>
  12. Mateo K.F., Vilme H., Verdaguer S., Fuqua A., Hoyt K., Davis J., Leung M.M., User-centered design and development of a web-based tool to support healthy feeding practices by parents of urban minority youth at risk for childhood obesity, (2024) *Digital Health*, 10. DOI: 10.1177/20552076241298433. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85211633145&doi=10.1177%2f20552076241298433&partnerID=40&md5=8ac432fd4f2fc7028e799fb2eccd2129>
  13. NC Overby, KR Ripatti, EN Valen, ER Hillesund, Young adults' experience with using a web based digital resource to promote healthy preconception diet, (2025) *BMC Nutrition*, 11 (1). DOI: 10.1186/s40795-025-01151-w. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-105019496767&doi=10.1186%2fs40795-025-01151-w&partnerID=40&md5=74e5cf57d26db7c766a18e598f199345>
  14. Nelson, M. C., Story, M., Larson, N. I., Neumark-Sztainer, D., & Lytle, L. A. (2009). Emerging adulthood and college-aged youth: An overlooked age for weight-related behavior change. *Obesity*, 16(10), 2205–2211. <https://doi.org/10.1038/oby.2008.365>
  15. Patton J., "Getting Software RITE," in *IEEE Software*, vol. 25, no. 3, pp. 20-21, May-June 2008. <https://doi.org/10.1109/MS.2008.62>
  16. Rana A., Rahman T., Masum A.K.M., Hasan I., Akhand R., Roy S., A Machine Learning-Driven Framework for Stroke Risk Prediction Using Clinical Data and Web-Based Decision Support, (2025) 2025 IEEE International Conference on Quantum Photonics, Artificial Intelligence, and Networking, QPAIN 2025. DOI: 10.1109/QPAIN66474.2025.11171659. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-105019061914&doi=10.1109%2fQPAIN66474.2025.11171659&partnerID=40&md5=da340121ed91784dd0c38b0699badda>
  17. Ruiz Maraggi L.M., Moscardelli L.G., Modeling hydrogen storage capacities, injection and withdrawal cycles in salt caverns: Introducing the GeoH2 salt storage and cycling app, (2023) *International Journal of Hydrogen Energy*, 48 (69), pp. 26921 – 26936. DOI: 10.1016/j.ijhydene.2023.03.293. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85152255002&doi=10.1016%2fj.ijhydene.2023.03.293&partnerID=40&md5=d60d488167b988af4b8e8bf07668a820>
  18. Schuster N., Zirpins C., Scholten U., How to balance flexibility and coordination? Service-oriented model and architecture for document-based collaboration on the Web, (2011) *Proceedings - 2011 IEEE International Conference on Service-Oriented Computing and Applications, SOCA 2011*. DOI: 10.1109/SOCA.2011.6166217. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84859991520&doi=10.1109%2fSOCA.2011.6166217&partnerID=40&md5=2f5a8a67368e2d7d4e6c3d96acf4edd7> [10]
  19. Sidorov G., Ahmad M., Basile P., Waqas M., Orji R., Batyrshin I., Monitoring Opioid-Related Social Media Chatter Using Natural Language Processing and Large Language Models: Temporal Analysis, (2025) *JMIR Infodemiology*, 5, pp. 1 – 20. DOI: 10.2196/77279. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-105027912489&doi=10.2196%2f77279&partnerID=40&md5=edd73ef8429f3434d7a9e6e8c5c3c4a6>
  20. Srikrishnanarat A., Kwonpongsagoon S., Web Application Support For Carbon Footprint Management of Petrol Stations in Thailand, (2020) *International Journal of GEOMATE*, 18 (68), pp. 142 – 148. DOI: 10.21660/2020.68.9246. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85114341674&doi=10.21660%2f2020.68.9246&partnerID=40&md5=bc788abc14599bb2866d86644bd0926e>
  21. Tan T.B., Cheng W.K., Ooi B.Y., Chen Y.-L., Implementation of Verification and Validation Tests in Malaysia Farm Context for the Precision Aquaculture Framework, (2025) *ICCE-Taiwan 2025 - 12th IEEE International Conference on Consumer Electronics - Taiwan: Generative AI in Innovative Consumer Technology, Proceedings*, pp. 51 – 52. DOI: 10.1109/ICCE-Taiwan66881.2025.11207890. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-105022421072&doi=10.1109%2fICCE-Taiwan66881.2025.11207890&partnerID=40&md5=9c9c748c34f4ccee846ce0b589f610fe>
  22. Wansink, B., & Sobal, J. (2007). Mindless eating: The 200 daily food decisions we overlook. *Environment and Behavior*, 39(1), 106–123. <https://doi.org/10.1177/0013916506295573>