Collabits Journal
Vol. 2 No. 1 January 2025 : 13-19
E-ISSN : 1979-5254, P-ISSN : 3062-8601
https://publikasi.mercubuana.ac.id/index.php/collabits

Web-based Application Design "UMB Eats" With Laravel Framework

Afiyati Afiyati[1], Zidane Fahrezi[2], Muhammad Rizky[3], Liandy Hayanto Ardi[4*], Ersa Ahmad[5]

[1,2,3,4,5] Informatics Engineering Study Program, Universitas Mercu Buana, Jakarta, Indoensia

*Coresspondent Author: 41523010103@student.mercubuana.ac.id

Abstract - The 'UMB Eats' application was developed to improve the efficiency of Mercu Buana University canteen services by providing online ordering and payment features. This application makes it easier for users to access menu information, prices, and food stocks, while reducing long queues at the canteen. This research aims to design a web-based system that is practical and helps the management of orders and stock by sellers. As a result, 'UMB Eats' proved to provide a faster and more convenient experience for users, as well as supporting a more organised canteen operation.

Keywords :
Application;
Laravel;
FoodOrdering;
Online canteen service;

Article History:
Received: 05-12-2024
Revised: 09-01-2025
Accepted: 26-01-2025

Article DOI : 10.22441/collabits.v2i1.31239

1. INTRODUCTION

Technological developments have affected various aspects of life, including in the management of public services such as canteens. Universitas Mercu Buana as a modern educational institution, strives to provide efficient and practical services to support the needs of students, lecturers, and academic staff. One of these efforts is the development of a web-based application called UMB Eats, which aims to facilitate access and management of canteen services.

The UMB Eats application is designed to provide information related to menus, prices, and food stocks, as well as allowing online ordering and payment. With this application, users can save time and avoid long queues, while canteen managers can monitor orders and food stocks in a more organised manner.

This research focuses on the design and development of the UMB Eats system by utilising the Laravel 11 framework and MySQL as a data processing base. The system is designed to support localhost-based operations and provides features such as store management by admin, shopping cart, payment methods, and user activity log.

With this application, Universitas Mercu Buana is expected to provide a more comfortable and efficient experience in using canteen services, both for users and managers. This research is also a foundation for further application development so that it can be widely applied. The following is the software used in the research:

A. Visual Studio 2022 is an effective tool for text editing in operating system development using the C programming language. With an intuitive interface and a range of advanced development features, Visual Studio 2022 offers an ideal environment to dive into the complexities of operating system development.
B. Laravel is a web development framework that aims to improve the quality of applications by reducing development costs, simplifying the maintenance process, and increasing work efficiency through structured and manageable code.
C. MySQL is one of the SQL database management system software. Unlike conventional databases such as .dat, .dbf, .mdb, MySQL has the advantage of being multithreaded and multi-user and supports network systems. MySQL is distributed for free under the GNU General Public License (GPL), but there is also a commercial version for those who want it.

By combining these powerful tools, this research aims to build a highly effective and easy-to-use web application that simplifies the management of canteen services while providing practical solutions to the challenges faced by users and managers.

2. LITERATURE REVIEW

The study explores how digital solutions can modernise school canteens, improving daily operations and making them more efficient and user-friendly. The use of Firebase for real-time data storage is also highlighted, which aligns with the goal of allowing users to save their orders instantly as they make them. This real-time feature is essential for developing an efficient e-canteen system.
Similar to the former, this paper discusses the development of an Android-based canteen app for university students. The paper emphasises on the design of the user interface (UI) and user experience (UX), which is praised for being neat, intuitive and easy to use. This focus on UI/UX is of paramount importance in designing an application such as the UMB Eats, which aims to increase user engagement and ease of access.

Use of the Waterfall method for system development, which includes a workflow diagram detailing how buyers interact with sellers. However, the group found that the Waterfall method's long development time made it less suitable for their needs, reinforcing the idea that more agile methods may be preferable. Additionally, they considered the development of a cross-platform system that allows for online food ordering, menu selection, payment processing, and notification delivery. Implementing secure transaction algorithms, such as AES encryption, would ensure the privacy and security of user data in the UMB Eats app. Moreover, the importance of accessibility and reduced waiting times in food ordering apps was emphasized. Ensuring that the UMB Eats app provides fast and responsive service will be crucial in enhancing user satisfaction and promoting its adoption.

This research highlights an admin interface that allows administrators to manage products, review ratings, and add or edit images. This ability to manage products and visual content is a useful feature that can be incorporated into the UMB Eats application to ensure smooth management and updating of products. In addition, the study also emphasised the use of mobile technology to reduce overcrowding in the canteen and shorten ordering time. To facilitate this, the group can implement a secure payment system using QRIS or integrate popular e-wallet APIs to enable cashless transactions in the UMB Eats app. In addition, the analysis of consumer preferences for mobile food ordering apps focused on factors such as price, convenience, and time saving. By designing an intuitive UI/UX that suits users' needs and preferences, the UMB Eats app can better serve the desires of the target audience.

3. METHODOLOGY

In this research using the SDLC Waterfall Method, the SDLC Waterfall Method is one of the methods that has the characteristics of working on each phase that must be done first before continuing to the next stage, with this method the results will focus on each phase so that the work is maximised.

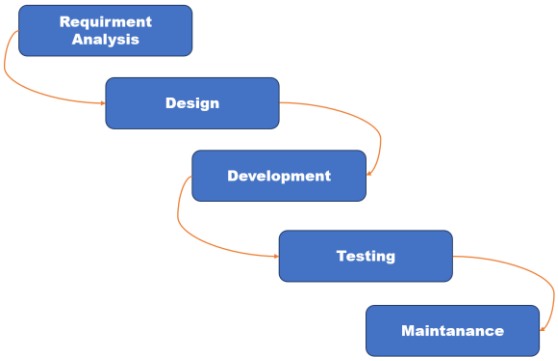

Figure 1. SDLC waterfall method

Requirment Analysis is the act of searching and researching a problem that will be discussed clearly in making application design. In this section, there are two types of needs that need to be considered in developing the 'UMB Eats' application, namely functional and non-functional needs.

Functional needs refer to needs that are directly related to the design of this application. For Admin Users, some functional needs that must be met include: admin can manage stores from the Mercu Buana University canteen, add menus from canteen stores, add new stores for canteens, manage users (Manage Users), and view user activity logs. Meanwhile, for the Buyer User, the desired functional requirements are: Users can view the list of stores from the Mercu Buana University canteen, view and order menus from the stores available at the canteen, add the menu they want to order to the basket, and view and select the payment method for the selected order.

Non-functional requirements are related to the specification of system requirements in terms of hardware and software. Some of the hardware required for the development of this application include: AMD Ryzen 7 6800H and 16 GB RAM. As for software, this application requires Visual Studio Code, Laravel 11, and Xamp.

System Design can include designing Use Case and Activity Diagram to describe the system to be developed. The following is an explanation of both diagrams in the context of system design:
Use case diagram:

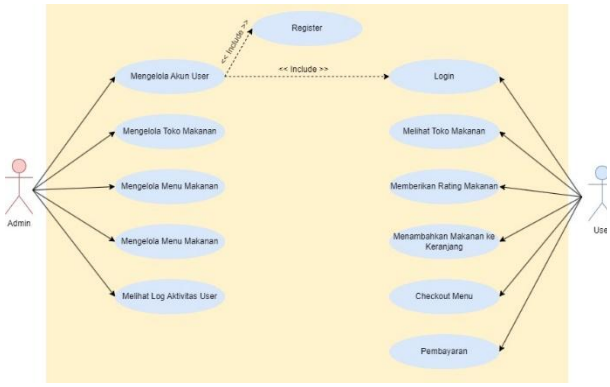

Figure 2. Use Case Diagram UMB Eats

The use case diagram shown illustrates the interaction between the two main actors in the system, namely Admin and User. The Admin actor has several privileges in the system, such as managing user accounts, managing food stores, managing food menus, and viewing user activity logs. Admins can perform various administrative tasks such as adding, changing, or deleting information related to food stores and menus, as well as monitoring user activity in the system. Meanwhile, User actors interact with the application to perform activities such as login, view available food stores, rate purchased food, add food to the shopping basket, checkout, and make payments. In this diagram, the Register process is required as part of Login, indicating that users must register first before they can access other features. The <<Include>> relation signifies that the registration process is an integral part of the login process for unregistered users. This diagram clearly illustrates the flow of interaction between the two actors and the main features present in the system.

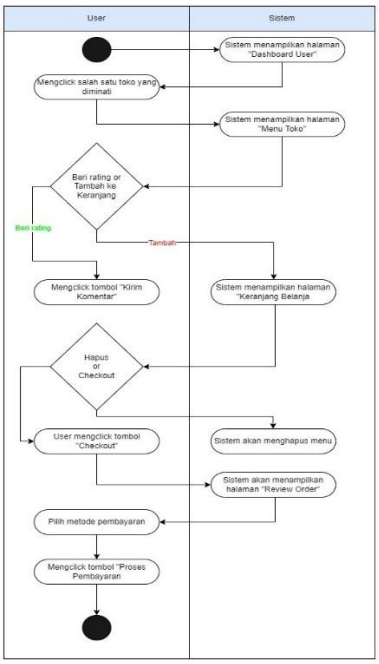

Figure 3. User Activity Diagram UMB Eats

The activity diagram illustrates the interaction between the user and the UMB-Eats system in a food ordering process. The process starts with the user selecting one of the available stores on the platform, after which the system displays the menu of the selected store. The user can then either give a rating or add an item to their cart. If the user gives a rating, they can submit it by clicking the "Send Comment" button. Alternatively, if the user adds an item to the cart, the system redirects them to the "Shopping Cart" page. On this page, the user has two choices: they can either remove items from the cart or proceed to checkout. If the user removes an item, the system updates the cart by deleting the selected item. If the user proceeds to checkout, the system displays the "Review Order" page. To finalize the process, the user selects a payment method and confirms the transaction by clicking the "Process Payment" button. This diagram effectively captures the step-by-step flow of a food ordering experience using UMB-Eats, detailing the user's actions and the corresponding system responses.

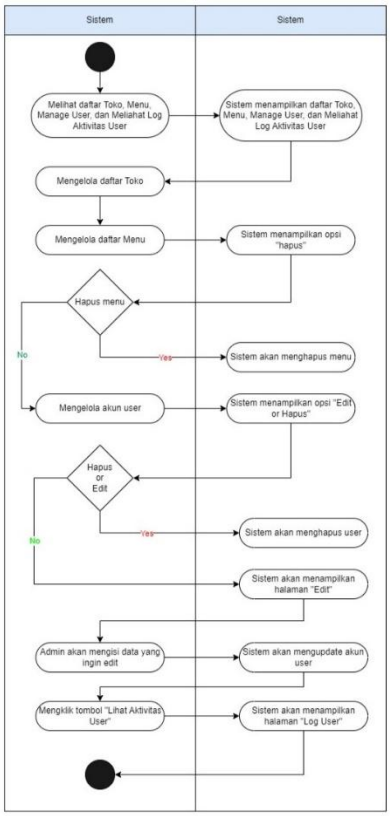

Figure 4. Admin Activity Diagram UMB Eats

This activity diagram illustrates the flow of actions for an admin in the UMB Eats application. The process begins when the admin accesses the system, where they can view a list of stores, menus, user management options, and user activity logs. If the admin chooses to manage stores, the system displays the list of stores, although no further actions for this option are detailed in the diagram. When managing

menus, the system provides an option to delete a menu. If the admin selects this option, the system will delete the menu. If not, the process ends for this task.

For managing user accounts, the system offers two options: "edit" or "delete." If the admin selects "delete," the system removes the user account. Alternatively, if the "edit" option is chosen, the system displays an edit page where the admin can update the user data. Finally, if the admin clicks the "View User Activity" button, the system navigates to the activity log page. Once any of these tasks are completed, the process ends. This diagram simplifies the admin's workflow, focusing on core actions like managing menus and users while ensuring efficient navigation through the system.

This system also uses a relational database to manage and store all the data efficiently, as shown below:

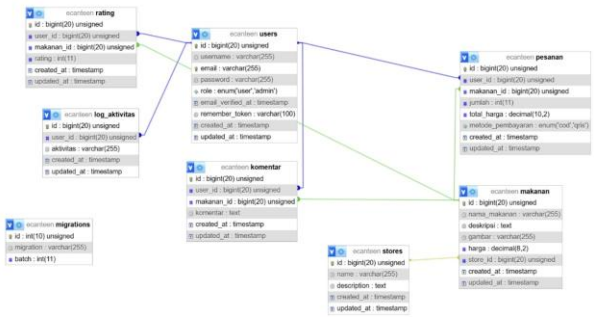

Figure 5. Relational Database of UMB Eats

The system uses a relational database to manage interconnected data efficiently. For instance, tables such as *users*, *makanan*, *pesanan*, and *rating* are linked using identifiers like user_id and makanan_id. These relationships allow the system to seamlessly handle tasks like associating users with their orders, storing ratings for specific food items, and tracking activity logs. This structure ensures data consistency and simplifies query processes for complex operations in the UMB-Eats platform.

Next is about the user interface, which is designed to make it easier for users to interact with the system. The interface includes several main pages like the login page, user dashboard, and admin dashboard. The login page allows users to access the platform easily, while the user dashboard lets them quickly browse stores, view menus, and place orders. For admins, the admin dashboard provides features to manage stores, add new menu items, and delete items when needed. There's also a page for adding food items, which has a simple form to input the name, description, price, and upload images. The interface is made to be simple, user-friendly, and efficient for all users.

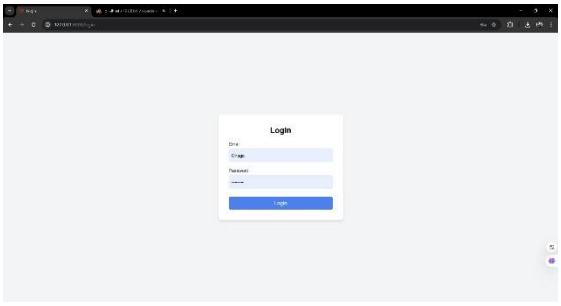

Figure 6. Login Page of UMB Eats

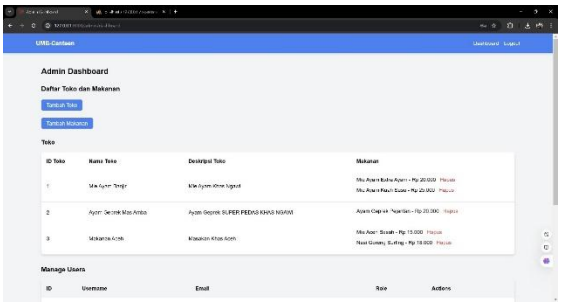

Figure 7. Admin Dashboard of UMB Eats

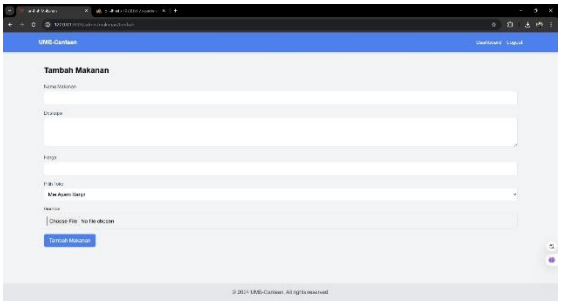

Figure 8. Admin "Add Food" Option of UMB Eats

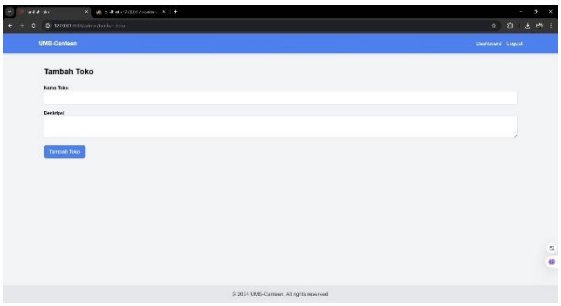

Figure 9. Admin "Add Shop/Stand" Option of UMB Eats

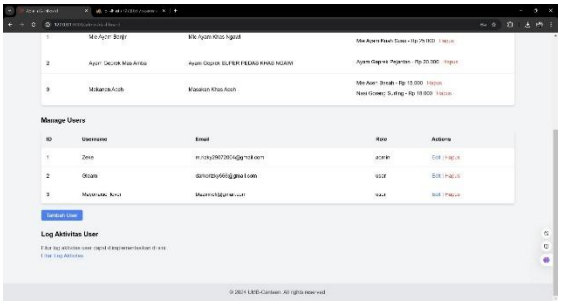

Figure 10. Admin Feature to Manage User of UMB Eats

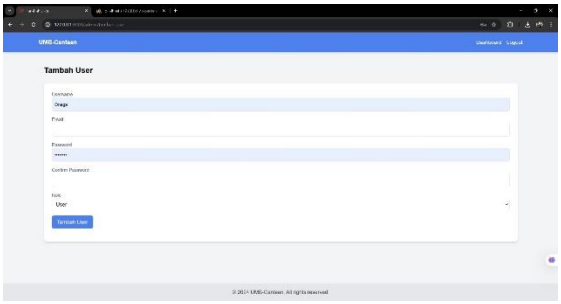

Figure 11. Admin Feature to Add User of UMB Eats

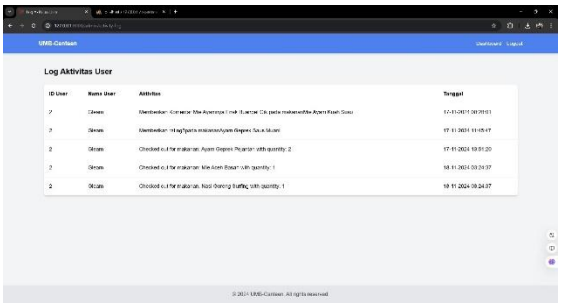

Figure 12. Admin Feature to see User Log of UMB Eats

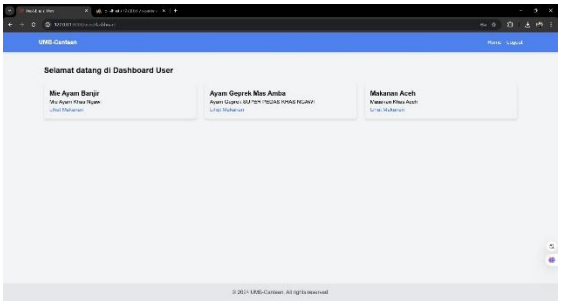

Figure 13. User Dashboard of UMB Eats

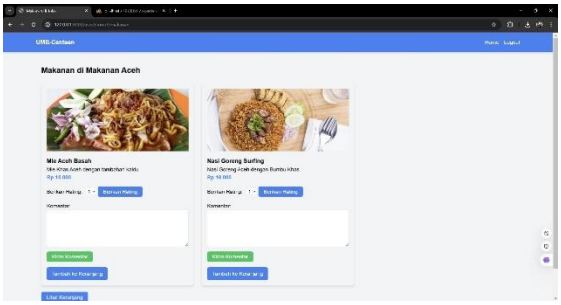

Figure 14. Menu List of UMB Eats

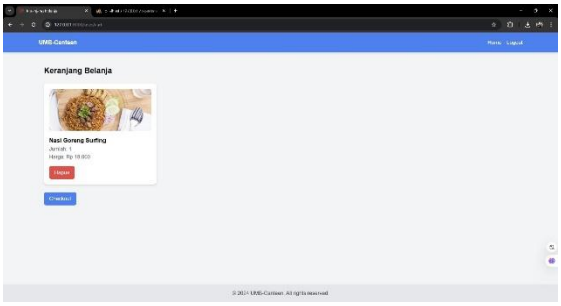

Figure 15. View Cart to Checkout of UMB Eats

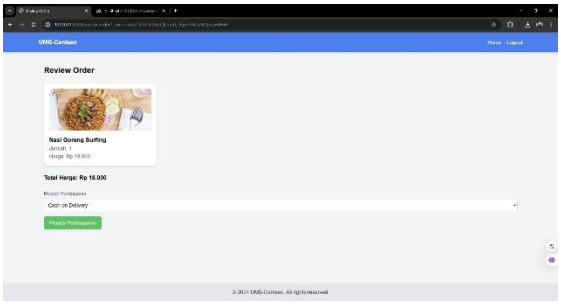

Figure 16. Review Order to confirm Checkout of UMB Eats

4. FINDINGS AND DISCUSSION

The UMB E-Canteen system is designed as a web application, divided into two main processes: Backend and Frontend. For the Backend, we use the Laravel framework version 11.31.0 with PHP programming language version 8.2.12. On the Frontend and User Interface side, we utilize Laravel-vite, Bootstrap, and Tailwind, along with PHP, HTML, JS, and CSS as the programming languages. For the database, we use MySQL. The source code provided includes key features such as the Login Page, User Dashboard, Cart Page, Activity Log Page, and Checkout Page. Here is some of the Source code, frontend and backend included:

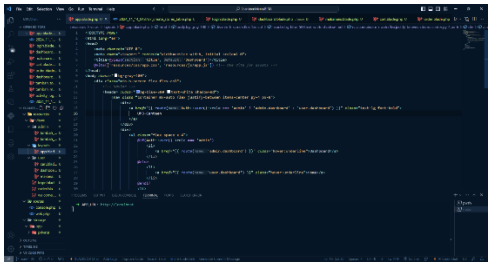

Figure 1. Source Code Frontend (Layout)

The frontend of the E-Canteen system uses CSS, JavaScript, and a Bootstrap template. The frontend integration is done using Laravel-vite, which involves PHP, HTML, and CSS, called through app.css and app.js to link them into the project. Before linking, we need to run npm install first to install Bootstrap and Tailwind and activate Laravel-vite.

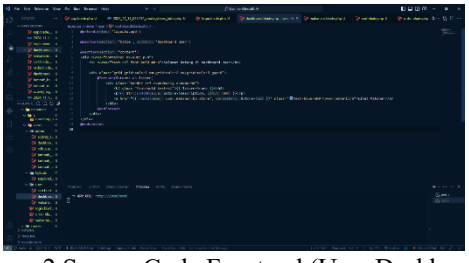

Figure 2.Source Code Frontend (User Dashboard)

Figure 3. Source Code Frontend (Cart View)

The source code in line 1 and the following lines is used to display the food items that have been added to the cart based on the session. It also includes code to implement the delete function for the delete button and a checkout button to take the user to the order page where they can select a payment method.

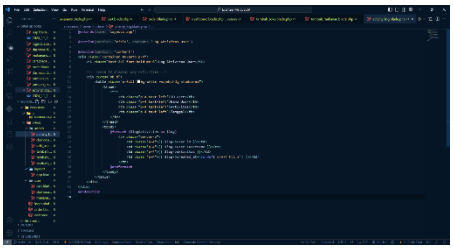

Figure 4. Source Code Frontend (Activity Log)

The source code is used to display user activities related to a specific food item. In this case, the user activities include giving a rating, leaving a comment, and completing a checkout.

The backend of the E-Canteen system uses Laravel, which is integrated using the MVC concept and built with PHP programming language. Now we are moving to the backend part:

Figure 5. Source Code Backend (Controller)

The source code from line 1 onwards is used to call the model so its functions can be imported into the controller.

Figure 6. Source Code Backend (CRUD Model)

The CRUD source code is used to call and process data that has been or will be stored in the database, which is needed for the functions used on the backend.

This section presents the results of experiments conducted using both positive test scenarios:

No	Tested Feature	Testing Scenario	Expected Result	Testing Result	Conclusion
1	Login Feature	Login using a registered user account	Display "Login Successful" and redirect to the dashboard page	Display "Login Successful" and redirect to the dashboard page	Passed
2	Dashboard Feature	Login using a registered user account	Display a list of stores	Display a list of stores	Passed
3	Store Feature	Open one of the displayed stores	Display the list of foods sold in that store	Display the list of foods sold in that store	Passed
4	Cart Feature	Add one food item to the cart and click the cart	Display the list of foods added to the cart	Display the list of foods added to the cart	Passed
5	Checkout Feature	On the cart page, click the checkout button	Display a confirmation page to choose a payment method	Display a confirmation page to choose a payment method	Passed
6	Payment Feature	On the confirmation page, click the payment process button after choosing a payment method	Display a message that the payment has been completed	Not yet implemented	Failed

Table 1. User Role Testing Results

No	Tested Feature	Testing Scenario	Expected Result	Testing Result	Conclusion
1	Login Feature	Login using a registered user account	Display "Login Successful" and redirect to the dashboard page	Display "Login Successful" and redirect to the dashboard page	Passed
2	Dashboard Feature	Login using a registered user account	Display tables for Stores and Users	Display tables for Stores and Users	Passed
3	Add Store Feature	Add a store by clicking the button on the dashboard	Display the Add Store form	Display the Add Store form	Passed

Table 2. Admin Role Testing Results

5. CONCLUSION

The development of the UMB Eats application has successfully addressed the issue of long queues in the Mercu Buana University canteen. This app allows students, lecturers, and visitors to order food online in a more practical and efficient way. Users can easily browse menus, check prices and stock availability, place orders, and make payments

without needing to wait in line. A unique feature of the application is its rating system, which enables users to provide and view feedback about the food, enhancing convenience and transparency when choosing meals.

In terms of technology, the application utilizes Laravel 11 for the backend, chosen for its modular structure and robust built-in security features. The frontend integrates Vite for faster development and seamless integration with Laravel, while MySQL is used as the database to handle a large user base, including approximately 3,000 students at Mercu Buana University. For managing food orders, the system employs the FIFO (First In, First Out) algorithm, ensuring that orders are processed in the sequence they are received. This approach creates a fair and organized workflow that aligns well with the needs of an online canteen.

The application includes several key features designed to simplify food ordering for users and streamline operations for the canteen. Users can browse menus, place orders, provide and view ratings, and complete payments online. Meanwhile, canteen administrators can manage food stock, monitor incoming orders, and track user activity. These features significantly enhance the overall user experience while improving operational efficiency.

The benefits of this application are evident in its ability to reduce queue times and make the food-ordering process more convenient for users. For the canteen management, it simplifies order processing, inventory management, and activity monitoring, leading to a more efficient service. However, the application has its limitations, as it currently operates only on a local environment (localhost) and focuses on basic features such as food ordering, canteen management, and transactions. Future development could involve hosting the app online, scaling it for broader use, and adding more advanced features to improve its functionality further.

Through this project, the UMB Eats application demonstrates its potential to modernize the traditional canteen system and deliver significant benefits to both users and operators.

6. REFERENCES

1. Afiksih, A. (2022). Web-based food ordering application design at PT. Pegadaian Kanwil I Medan canteen. *Journal of Computer Science and Informatics Engineering,* 66–77.

2. Akbar, H., Nurul Hisyam, M., & Broto Legowo, M. (2019). Payment gateway on E-Canteen website application. *International Journal of Progressive Sciences and Technologies (IJPSAT),* 12(2), 108–112.

3. AlAfif, A. N. F., Addani, F., & Nugrahaeni, C. P. D. (2020). Canteen service application for the UPN "Veteran" Jakarta canteen. *Seminar Nasional Mahasiswa Ilmu Komputer dan Aplikasinya (SENAMIKA),* Jakarta, Indonesia, January 28, 2020.

4. Budirahmat, A., Riza, T. A., & Vidyaningtyas, H. (2014). Android-based transaction management information system application for the Faculty of Engineering, Telkom University canteen. *e-Proceeding of Engineering,* 1(1), 462. Retrieved from

5. Kale, R. B., Balwade, R. K., & Gawai, V. B. (2020). Online food ordering system for college canteen. *SAMRIDDHI: A Journal of Physical Sciences, Engineering and Technology,* 12(SUP 2), 64–68.

6. Khairunnisa, P. R., Ilmi, R. N., & Balqis, S. D. (2023). Web-based electronic canteen application design "Klik-EAT! UNS". *Jurnal SANTI (Sistem Informasi dan Teknologi Informasi),* 8–18.

7. Kogta, A. K., Riza, T. A., & Vidyaningtyas, H. (2020). Cross-platform application for canteen food ordering system. *International Journal of Innovative Technology and Exploring Engineering (IJITEE),* 9(8), 462–468..

8. Madawara, H. Y., Sembiring, I., & Iriani, A. (2023). User interface/user experience design for Café Biru FTI application using Figma with a design thinking approach. *Jurnal MNEMONIC,* 6(2).

9. Masurkar, S., Dhagadi, A., Kulkarni, Y., & Aylani, A. (2022). Canteen ordering system using Android. *International Journal of Engineering Applied Sciences and Technology,* 6(11), 199–202.

10. Nikhil, S. (2022). Canteen automation system using Android. *International Journal for Research in Applied Science and Engineering Technology,* 10(6), 2830–2834.