

Development of a Seblak Food Ordering Information System Using the Agile Method

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Article Info

Article history:

Received February 24, 2025

Revised May 4, 2025

Accepted June 29, 2025

Keywords:

Information System

Food Ordering

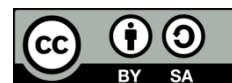
Agile Method

Website

ABSTRACT

Warung Seblak is a culinary business that currently relies on a manual ordering and transaction system, requiring customers to place orders either by visiting the restaurant directly or through WhatsApp. This approach creates several challenges, including recording errors, missed orders during peak hours, and the absence of real-time order status information. To address these issues, this project aims to develop a web-based food ordering information system using the Agile software development method. The proposed system is designed to automate the ordering process, transaction management, and sales reporting, thereby improving operational efficiency and service quality. The system was developed over a six-week period following the Agile development lifecycle, which includes the planning, requirements analysis, design, development, testing, and review phases. The outcome of this project is a functional web-based Seblak food ordering information system developed using the Agile method. Future work will focus on extending the system into a mobile-based application with more dynamic features and enhanced functionality to better support user needs and business growth.

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1. INTRODUCTION

The rapid advancement of information technology has significantly influenced various business sectors, including the culinary industry. The culinary business has become one of the most promising sectors due to the continuous demand for food as a basic human necessity. As people require food every day, the increasing demand has encouraged culinary businesses to adopt information technology to improve operational efficiency, enhance service quality, and provide a more convenient ordering experience for customers. [1]. The adoption of information technology enables businesses to improve service quality, accelerate business processes, and simplify data management. One of the most widely implemented technological solutions is a web-based information system, which provides users with easy access to services while supporting efficient business operations through automated data processing, transaction management, and real-time information delivery [2]. Previous studies have demonstrated the application of information systems to improve food ordering processes in restaurants and culinary businesses. Web-based food ordering systems have been developed to support menu management, order processing, transaction management, and reporting, with Agile methods used to facilitate iterative development and adaptation to user requirements. Other studies have adopted Agile Scrum for QR-code-based self-ordering, enabling customers to browse menus and place orders while supporting transaction management by administrators. Mobile-based food ordering applications have also been developed to address problems such as long queues, order-recording errors, and service delays. These studies indicate that digital ordering systems can support more structured and efficient food-service operations.

Warung Seblak is a culinary business that offers a variety of Seblak dishes with diverse topping options and customizable levels of spiciness. Currently, the ordering and transaction processes at Warung Seblak are still carried out manually, which often leads to operational inefficiencies and service limitations. However, most previous studies focus broadly on restaurant or general culinary ordering systems, with features such as menu browsing, online ordering, transaction management, QR-code ordering, and reporting. Consequently, there remains an opportunity to develop an information system specifically adapted to the operational characteristics of Seblak culinary businesses, where menu customization, variations in ingredients or toppings, level of spiciness, quantity selection, and order preferences can become important components of the ordering process.

Seblak has become one of the most popular culinary choices among young consumers, particularly in Tangerang Regency and other regions of Indonesia. Originating from Bandung, West Java, Seblak is a traditional Sundanese dish made primarily from boiled crackers cooked with various spices and ingredients. Its distinctive spicy flavor and flexible topping options have contributed to its growing popularity among consumers.

In recent years, the culinary industry has emerged as one of the fastest-growing business sectors, driven by changing consumer lifestyles and increasing demand for convenient and unique dining experiences. In particular, Seblak has gained significant popularity among Generation Z, who actively seek trendy, customizable, and digitally accessible food products. This trend highlights the need for culinary businesses to adopt information technology to enhance customer service, streamline business operations, and remain competitive in the digital era [3].

Customers currently place orders either by visiting the restaurant directly or by contacting the seller through WhatsApp. All orders are recorded manually before being processed and served. This manual ordering system presents several operational challenges, including order recording errors [4], missed orders during peak business hours, difficulties in managing multiple orders simultaneously, inefficient transaction processing, and the inability of customers to monitor their order status in real time. These limitations reduce operational efficiency and may negatively affect customer satisfaction and the overall quality of service. Therefore, implementing a web-based food ordering information system is essential to streamline business processes, improve order accuracy, and provide a more efficient and transparent ordering experience for both customers and business owners [5].

The implementation of the Agile method in developing an ordering system aims to produce a system that is adaptive to changing user needs [6]. It also provides real-time order status prediction and food processing time estimates. This feature allows customers to receive accurate information about the stages of the food preparation process, from when the order is received, through processing, and when it's ready to be served. The availability of transparent and detailed information allows customers to more accurately estimate order completion times. [7], so that uncertainty and perceptions about long wait times can be minimized. This system not only improves operational efficiency but also provides a more informative, responsive service experience and increases customer satisfaction.

Based on the analysis, it was discovered that the ordering process at Warung Seblak is still done manually, either through direct customer visits or via WhatsApp, resulting in various obstacles such as errors in order recording, difficulty managing transactions, and the lack of real-time order information. To address these issues, a web-based cashier and ordering information system was designed that can automate the ordering process, transactions, and sales reporting [8]. A web-based ordering information system can help with the ordering, transaction and data management processes in an integrated manner [9]. This system is expected to improve the quality of service to customers and make it easier for business owners to manage their business operations.

The objectives to be achieved in this system development project include analyzing the ongoing ordering process at Warung Seblak, identifying obstacles that occur in the manual ordering and transaction system, designing a web-based cashier and ordering information system that suits the needs of users (stall owners and customers) using the Agile method. The novelty of this study lies in adapting an Agile-based food ordering information system to the specific characteristics of Seblak businesses, particularly customizable menu options, ingredient or topping selection, and order preferences, rather than developing a generic restaurant ordering system.

2. METHOD

Data collection in this study was conducted through two approaches: a literature study and a field study. The literature study was conducted by reviewing various previous studies published in accredited national journals within the last five years as a theoretical basis and reference for developing the research [10]. Meanwhile, a field study was conducted through direct observation of the seblak stall's business processes and

interviews with the business owner using a pre-developed interview guide. Through these two methods, comprehensive data was obtained regarding system requirements, ordering processes, and operational issues [11].

The system was built using Agile methods, and is website-based, with all features tailored to user needs and requirements. The Agile method used in system development offers high flexibility and the ability to adapt to changing user needs throughout the development process [12]. Some of the reasons for using the agile method are because this method is quick to adapt to changing user needs [13], active user involvement with gradual development according to priority needs, faster processes and lower risks [14]. The use of Agile methods in system development allows the development process to be carried out in stages and flexibly so that the resulting system can meet user needs [10]. The steps that have been taken in developing the system using the Agile method are shown in Figure 1.

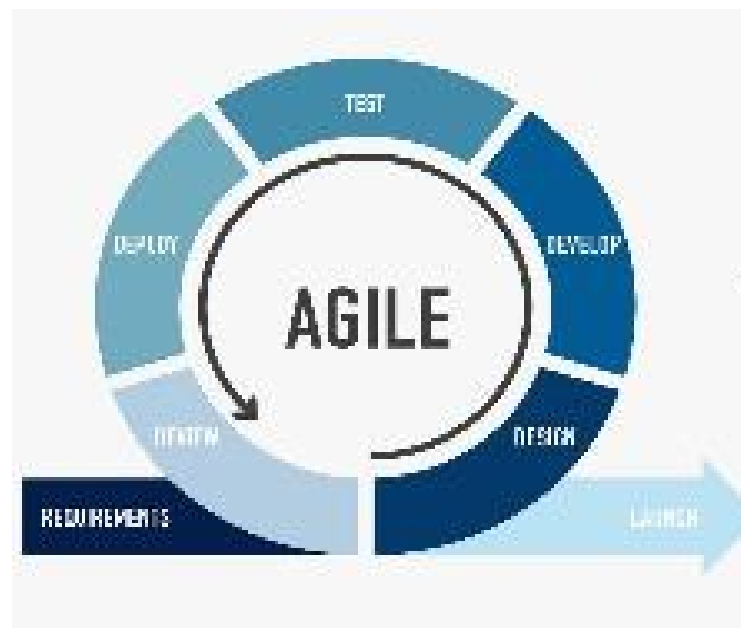


Figure 1 Agile Method [15]

System development using the Agile method for ordering seblak food is carried out with the following steps:

- a. Requirements analysis involves gathering all the requirements used to build the system, directly involving users in determining these requirements.
- b. Design involves designing and creating the system architecture, visual design, interface design, and other elements.
- c. Development involves coding the system based on the agreed-upon design between the developer and the user, with each stage or cycle of the system demonstrated and approved by the user.
- d. Testing involves thoroughly testing all features and ensuring the application can be used without any issues [16]. Testing is carried out by directly involving potential users so that any problems found can be immediately followed up and fixed by the team [17].
- e. Deploy the system through system testing, ensuring its quality and reliability, and ensuring it is ready for user use.
- f. Reviews are conducted to monitor and evaluate each development process, and all input and changes are accommodated without missing anything, ensuring the system meets user needs

Application testing was conducted using black box testing, assessing the reliability of all features in the cashier and food ordering systems. Testing was conducted to ensure the system could be used properly without significant issues and that the implementation process could be carried out smoothly.

3. RESULTS AND DISCUSSION

The proposed solution is to build a web-based cashier and ordering information system capable of automatically managing order data, transactions, and sales reports, thereby making the service process more effective and efficient. System requirements are divided into two parts. Customer requirements include

registration and login, viewing the menu list, placing orders, viewing order status, viewing the shop location, and viewing order history. Admin requirements include managing menu data, managing customer orders, managing transactions, managing customer data, and viewing sales reports. Current System Analysis Based on the results of observations made, the current ordering process at Warung Seblak is: (1) Customers order by coming directly to the stall or contacting via WhatsApp. (2) The owner records orders manually in a notebook. (3) The owner calculates the total transaction manually. (4) The owner creates a sales report manually.

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A. Requirement

Analysis of the Current System Based on the results of the observations made, the current ordering process at Warung Seblak.

- 1) Customers order by coming directly to the shop or contacting them via WhatsApp.
- 2) The owner records the order manually in a notebook.
- 3) The owner calculates the total transaction manually.
- 4) The owner creates a sales report manually

B. Design System

The system design produces various important documents, including use case diagrams, which illustrate the interactions between actors and the system, and activity diagrams, which depict the flow of system activities. This ordering system has two actors: the customer and the owner, who also acts as an administrator, with features tailored to user needs.

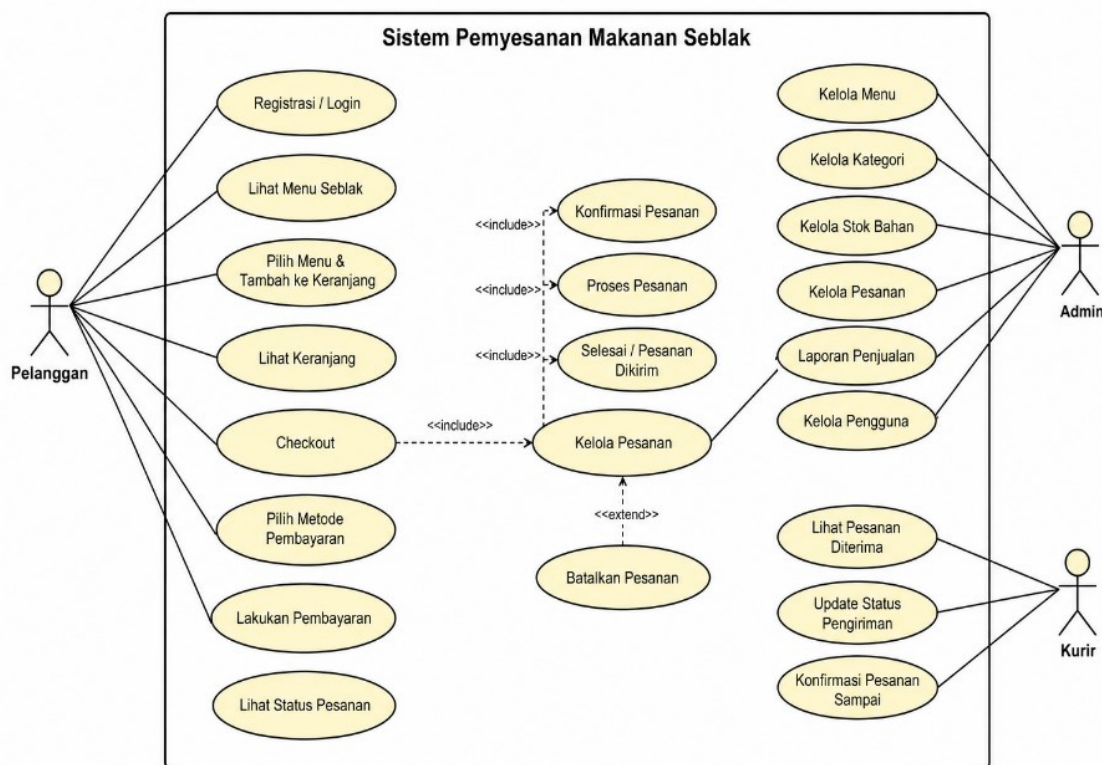


Figure 2 Use case diagram of Ordering

The use case diagram shows customers having access rights to view store status, view spice levels, view order categories, order menu items, view order status, make payments, and manage orders. Meanwhile, the owner (admin) has access rights to log in as the owner, manage menu items, manage orders, manage transactions, and manage customer data, as well as view sales reports.

C. Development

1) QR Code Home Page



Figure 3 QR Code Home Page

This image shows customers scanning a QR code to order seblak. It also includes features to share, save, print, open the menu, and return to the beginning.

2) Select Access Mode Page

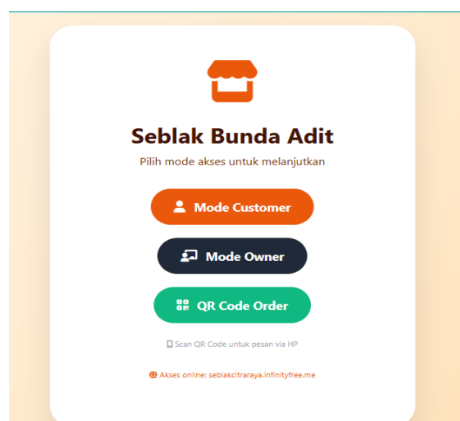


Figure 4 Select Access Mode Page

Figure 4. This page contains information about selecting access modes starting from customer mode, owner mode and QR Code Order which is used to order via mobile phone.

3) Initial Customer Page

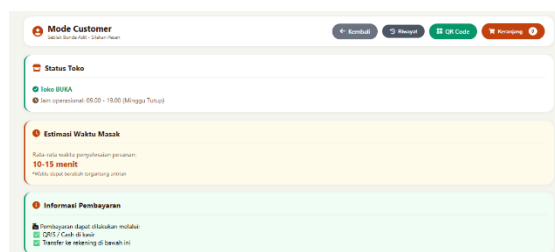


Figure 5 Customer Page

Figure 5. The initial customer page, located in customer mode, displays the store's status, whether it's open or closed, and its operating hours. It also provides an estimated cooking time, allowing customers to determine when to pick up their order. This page also provides payment information, whether to use Qris or cash at the cashier.

4) Payment Menu Page

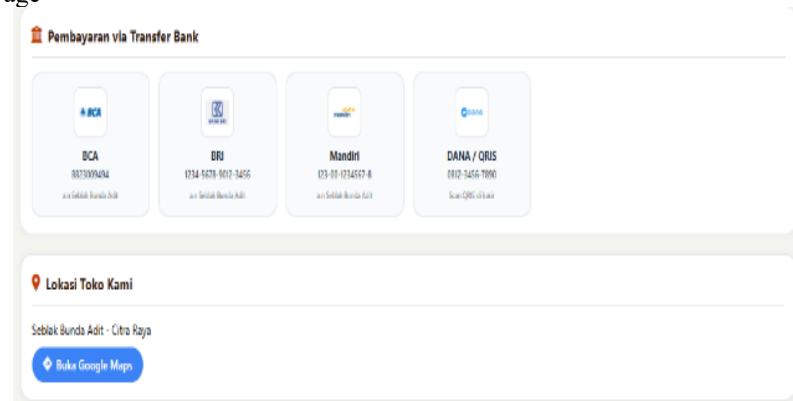


Figure 6 Payment Menu Page

The payment menu page via bank transfer offers several options, including BCA, BRI, Mandiri, and Dana/Qris, making it easier for customers to pay for their orders. This page also includes information about the store's location along with a Google Map.

5) Select Menu Page

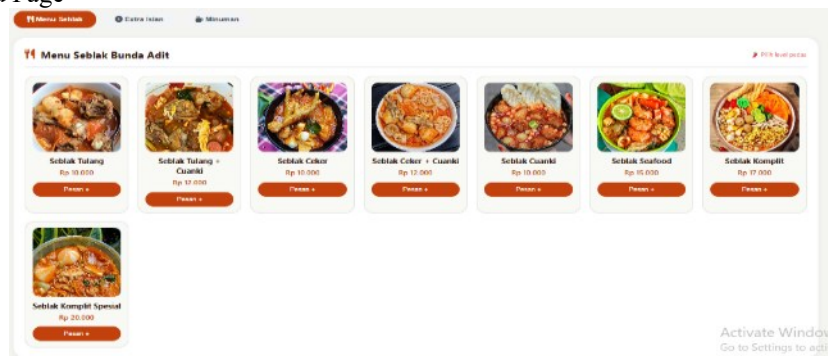


Figure 7 Menu selection page

Figure 7. The menu selection page displays several seblak menus that customers can choose from, along with the prices listed below the menu image.

6) Store Location Page

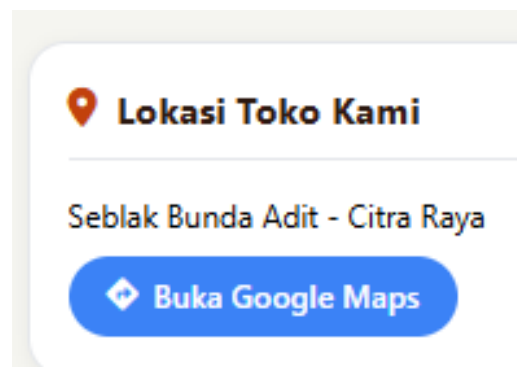


Figure 8 Store Location Page

Figure 8, This page contains information about the shop location and there is a facility to open Google Maps for the shop or seblak stall location.

D. Testing

System testing was conducted using Agile methods with an iterative testing approach, where each feature was tested immediately after development. Testing focused on the system's core functions to ensure each feature functioned according to user requirements. Can see Table 1.

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1) Testing Scenario - Customer Side

Table 1 Testing from the customer side

Scenario	Test Cases	Expected results	Status
Registration	User fills in the registration form and valid data	Account created successfully	Success
Login	User enters email and password	User successfully logged into the system	Success
Login failed	User entered wrong email and password	The system displays an error message	Success
View Menu	User opens menu page	The menu list is displayed in full	Success
Select Spicy Level	Users select products by spiciness level	he spice level options (1 – 5) appear.	Success
Add to cart	User adds product to cart	Product added to cart	Success
Chekout	User checks out	Order successfully created	Success
View order status	User views order status	Order status is displayed	Success
View Order History	User views order history	Order history is displayed	Success

2) Testing Scenario - Admin (Owner) Side

Test scenario from the admin side, where the admin is also the owner, as shown in Table 2.

Table 2 Testing from the customer side

Scenario	Test Cases	Expected results	Status
Login Admin	Admin entered the correct ID and password	Admin berhasil masuk ke dashboard	Success
Admin Login Failed	Admin entered the wrong ID and password	The system displays an error message	Success
Tambah Menu	Admin added a new menu	Menu baru tersimpan di database	Success
Edit Menu	Admin changes menu data	Data menu berhasil diupdate	Success
Delete Menu	Admin deletes menu	Menu successfully deleted	Success
View Active Orders	Admin opens order list	Active orders are displayed	Success
Update Status "Ready"	Admin updates the order status to "Ready"	Order status changed to Ready	Success
Payment Process	Admin makes payment with sufficient money	Status becomes completed, move to history	Success
Payment Process Less	Admin made payment with less money	The system displays an error message	Success
Delete Order	Admin deletes order	Order successfully deleted	Success
View Sales Report	Admin creates sales report	Sales report is displayed	Success

Based on the test results from both the customer and admin (owner) side, all the features used were declared successful.

E. System Deploy

At the deployment stage, the team conducts a thorough check of all system activities until it is confirmed that the system is completely free of problems and that what has been created is in accordance with user needs and is ready to use.

F. Review

The review process is carried out through monitoring and evaluation to obtain a reliable and problem-free system so that the system is ready for use.

1) Monitoring, this stage is carried out periodically for 6 weeks of development with a mechanism:

- Weekly Meeting: The team meets weekly to discuss project progress.
- Progress Report: Each team member reports on the progress of their respective tasks.
- Lecturer Consultation: Consult with the supervising lecturer for guidance and input.
- User Feedback: Input from Warung Seblak owners as potential system users

2) Evaluation

Evaluations were conducted at the end of each development stage with a focus on the project. The results showed that the development process was progressing according to the predetermined schedule. Communication between the team and users was good

Table 3 Ordering System Evaluation Results

Stage	Evaluation	Follow-up
Planning	Have the needs been well identified?	Added features based on shop owner input
Requirement Analysis	Are the features designed to meet your needs?	Feature priority adjustment
Design Development	Is the system design appropriate?	Interface design improvements
	Is development on schedule?	Time allocation adjustment
Testing	Are all features working properly?	Bug and error fixes
Review	Does the system meet user needs?	Final improvements based on feedback

Using the Agile method, system development has proceeded smoothly and within the established timeline. Flexibility in addressing changing needs is enhanced by effective team communication, and the features utilized are aligned with user needs. However, there are drawbacks, including the short development time and the lack of automatic customer notification for the digital payment feature. This will be further developed with automated notification in the future.

4. CONCLUSION

A food ordering system was developed to address various issues at Warung Seblak Panongan. The system was developed using a website-based Agile methodology, with direct user involvement throughout the development process. Based on the analysis and design, the ordering process at Warung Seblak was still manual, requiring in-person visits or via WhatsApp. This resulted in errors in order recording, missed orders during peak times, difficulties managing numerous orders, and the lack of real-time order status information.

The study successfully developed a Seblak Food Ordering Information System using the Agile method, with functional testing confirming that the main system features operate as intended. However, the current evaluation provides limited evidence to conclusively establish improvements in overall service effectiveness. Therefore, the findings primarily demonstrate successful system development and functional implementation. Future studies should employ quantitative pre- and post-implementation measurements, involve more users, and compare the system with existing food-ordering or POS solutions to provide stronger evidence of its impact on service efficiency and user satisfaction.

The web-based cashier and ordering system was designed to automate the ordering process, transactions, and sales reporting. The Agile development approach proved effective and flexible. The system was successfully built and designed according to the planned schedule, and all features were tailored to user needs. The Seblak Shop admin (owner) greatly benefited from this cashier and ordering system, as evidenced by the consistently increasing number of sales transactions recorded in the system. The system also facilitates the admin (owner) in viewing daily, weekly, and monthly results and profits. Future development should follow a user-centered priority rather than focusing primarily on adding technological features. The priority should be improving the core ordering and customization process based on user feedback. Mobile application development should be considered when evidence indicates frequent smartphone-based usage, while dynamic features such as real-time menu availability, order-status tracking, and notifications should be prioritized according to their relevance to identified user and operational needs. This prioritization ensures that future system development provides measurable value to customers and business operators rather than simply increasing the number of system features.

ACKNOWLEDGEMENTS

Thank you to the Software Engineering lecturers for giving me the opportunity to work on this software development project. Thank you to my fellow students on the student team for working together to complete this project, from system planning to testing and implementation. Hopefully, this project will provide a very meaningful experience for the students.

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