International Journal of Management Science and Information Technology
IJMSIT

E-ISSN: 2774-5694 P-ISSN: 2776-7388 OPEN ACCESS

Volume 6 (2), July-December 2026, 2092-2102
DOI: https://doi.org/10.35870/ijmsit.v6i2.8472

# Web-Based Restaurant Management Information System at Adamsafee Bakery, Resto, and Cafe (ABRC)

**Kharis Ferdiansyah [1*], Supriyono [2], Diana Laily Fithri [3]**
[1*,2,3] Information Systems Study Program, Faculty of Engineering, Universitas Muria Kudus, Regency Kudus, Central Java, Indonesia

Email: 202253177@std.umk.ac.id [1*], supriyono.si@umk.ac.id [2], diana.laily@umk.ac.id [3]

Article history:
Received August 19, 2026
Revised August 26, 2026
Accepted August 27, 2026

## Abstract

Restaurants require integrated information management to connect ordering, payment, kitchen operations, sales transactions, and raw material management. At Adamsafee Bakery, Resto, and Cafe (ABRC), these activities required more structured information management to support restaurant operations and raw material handling. This study aims to develop a Web-Based Restaurant Management Information System at ABRC that integrates restaurant operational processes and applies the First in First Out (FIFO) method to raw material management. The study employed the System Development Life Cycle (SDLC) with the Waterfall model. Data were collected through observation, interviews, and literature study, while system design used Unified Modeling Language (UML). The implemented system supports ordering, payment, cashier order management, kitchen order management, raw material purchasing, material usage, and an owner dashboard. FIFO uses inventory receipt dates to determine the priority sequence of material usage, with recipe data providing the required material quantities for ordered menu items. Black-box Testing was conducted to examine the implemented system functions and FIFO mechanism based on specified testing scenarios. The results indicate that the tested functions operated according to their expected outputs, including the FIFO mechanism that prioritizes materials according to their receipt-date sequence. The study concludes that the implemented system integrates restaurant operational processes with raw material management and provides functional support for FIFO-based material usage. Quantitative impacts on operational efficiency, inventory accuracy, costs, material waste, and overall performance were not measured and therefore require further evaluation.

**Keywords**:
Restaurant Management Information System; Web-Based System; Raw Material Inventory; FIFO Method.

## 1. INTRODUCTION

The development of information technology has changed the management of business operations, including in the culinary sector. Restaurants require not only systems for recording sales transactions but also information management that can connect ordering, payment, kitchen operations, raw material inventory, and operational information for business managers. The availability of structured information is important because restaurant activities involve interconnected processes, from customer ordering to transaction completion and inventory management. Previous research on restaurant inventory has demonstrated the relevance of web-based information systems for supporting more structured inventory recording and management (Sujana, 2022).

Restaurant information systems have also been developed to support transaction processing and Point of Sale (POS) activities. A web-based POS system developed for a culinary business supports transaction processing and operational reporting, while another POS study applied a web-based system to organize sales activities using the system development life cycle (Gani et al., 2023; Marisa & Yuarita, 2017). A web-based POS system using the Waterfall model has also been developed to support transaction management in a web

environment (Nugraha et al., 2021). These studies demonstrate the relevance of computerized information systems for organizing restaurant transactions and operational information.

The scope of restaurant information systems extends beyond POS functions. Research on web-based restaurant management has addressed restaurant ordering, menu information, payment-related information, and other operational activities (Ismawan & Cahyono, 2025; Wijaya & Wahyuningtyas, 2024). Web-based food ordering research at Omah Makan Jawa developed a system using the Waterfall method and UML to support digital food ordering (Sari et al., 2024). Research on Electronic Customer Relationship Management in a culinary business also addressed web-based ordering and customer-related information management (Jayanti & Kuswanto, 2023). Digitalization of ordering and customer information has also been examined in a restaurant and catering context through Customer Relationship Management (Syafa'ah et al., 2025). These studies demonstrate that web-based systems can support different restaurant activities, although their operational scopes and research contexts vary.

Raw material management introduces another operational requirement in culinary businesses. Restaurant and food-service operations depend on the availability and use of raw materials, so inventory information must be managed in relation to operational activities. Sujana (2022) developed a web-based inventory information system for a restaurant environment, demonstrating the relevance of structured inventory information to restaurant operations. In the context of FIFO, Surya Jati et al. (2024) implemented a web-based raw material inventory system using the First In First Out method in a bakery environment. Mandalangi et al. (2025) also developed a web-based inventory information system using a FIFO algorithm, while Sekti et al. (2024) applied FIFO in a web-based inventory system. These studies demonstrate the applicability of FIFO to inventory management, but the objects and operational contexts differ from an integrated bakery, restaurant, and cafe environment.

Adamsafee Bakery, Resto, and Cafe (ABRC) operates bakery, restaurant, and cafe activities. Based on the identification of research problems, several operational activities at ABRC previously faced limitations because sales recording, raw material inventory management, and the preparation of operational information were still performed manually. This condition resulted in operational data not being optimally documented and made it difficult to trace sales and inventory information. The business owner also faced limitations in obtaining integrated operational information for monitoring business activities and conducting evaluations based on available data.

The problem is not limited to transaction recording but also concerns the relationship between menu sales and raw material usage. Each menu transaction has specific material requirements based on its recipe, so sales information can be connected to the materials required for production. On the inventory side, materials received at different times need to be managed according to their receipt sequence so that material usage can be traced. Therefore, the system developed in this study is not only intended to digitize record keeping but also to connect ordering and sales processes with raw material management.

Previous studies have addressed different components of restaurant and inventory management. Restaurant management information systems have addressed ordering, payment-related information, menu management, and restaurant operational information (Ismawan & Cahyono, 2025; Wijaya & Wahyuningtyas, 2024). POS research has focused on transaction and sales management (Gani et al., 2023; Marisa & Yuarita, 2017; Nugraha et al., 2021). Web-based ordering research has focused on digital food ordering and customer-related information management (Jayanti & Kuswanto, 2023; Sari et al., 2024; Syafa'ah et al., 2025). Inventory research has addressed restaurant inventory management and FIFO implementation in bakery and other inventory environments (Sujana, 2022; Mandalangi et al., 2025; Sekti et al., 2024; Surya Jati et al., 2024).

The research gap in this study is therefore defined at the system and operational-context level. The specific need addressed by the present research is the implementation of a web-based Restaurant Management Information System that connects ordering, payment, cashier order management, kitchen order management, raw material purchasing, material usage, and owner information with FIFO-based raw material management in the ABRC context. The gap is not claimed as the absence of all similar systems. Instead, the study addresses the need to implement these interconnected operational requirements within the specific bakery, restaurant, and cafe context of ABRC.

The objective of this study is to develop a Web-Based Restaurant Management Information System at Adamsafee Bakery, Resto, and Cafe that supports restaurant ordering and sales-related operations while implementing the First In First Out (FIFO) method for raw material management. The system is also intended to provide operational information for relevant users based on information recorded within the system.

The contribution of this study lies in the implementation of an integrated web-based system that connects restaurant operational processes with FIFO-based raw material management at ABRC. The contribution is limited to system implementation and functional operation based on the available evidence. The study does not claim quantitative improvement in efficiency, inventory accuracy, cost, material waste, or overall operational performance because those indicators were not quantitatively measured.

## 2. RESEARCH METHOD

### 2.1. Research Design

This study employed a system development approach to develop a Web-Based Restaurant Management Information System at Adamsafee Bakery, Resto, and Cafe (ABRC). The development process used the System Development Life Cycle (SDLC) with the Waterfall model. The research stages consisted of problem identification, data collection, requirements analysis, system design, implementation, and testing.

The study began with identification of operational problems at ABRC and collection of information related to restaurant business processes. The information obtained was used to determine system requirements. The next stage involved system design using Unified Modeling Language (UML), followed by implementation as a web-based application. The implemented system was subsequently tested using Black-box Testing.

The Waterfall approach was selected because its sequential development structure is consistent with previous web-based POS and food-ordering system research (Marisa & Yuarita, 2017; Nugraha et al., 2021; Sari et al., 2024). The research framework is presented in Figure 1.

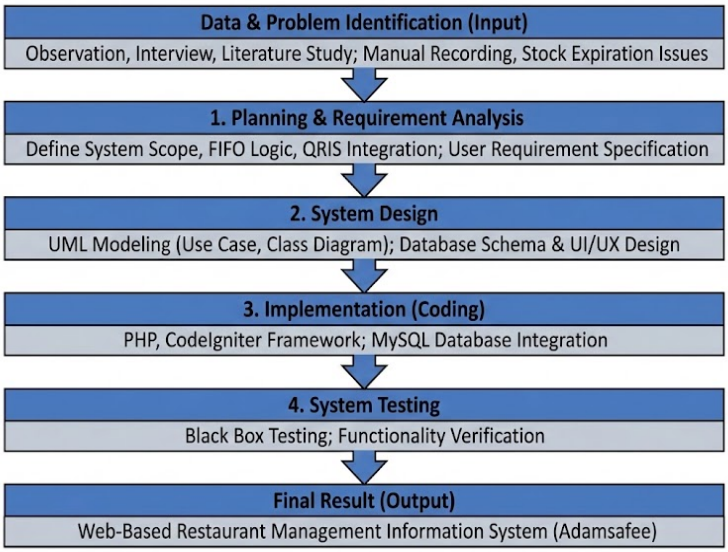


Figure 1. Research Framework

The framework illustrates the sequence from problem identification and data collection to requirements analysis, system design, implementation, and functional testing. The final stage includes testing of the implemented system functions and the FIFO-based raw material usage mechanism.

### 2.2. Data Collection

Data collection was conducted through observation, interviews, and literature study. Observation was conducted to obtain information about ABRC's operational processes, particularly ordering, sales transactions, payment, cashier activities, kitchen order management, and raw material management. The observation results were used to identify operational requirements that needed to be represented in the system.

Interviews were conducted with parties involved in ABRC's business activities to obtain information regarding operational problems and system requirements. The information obtained from the interviews was used as a basis for determining functional requirements and system design. The available research evidence does not document a numerical count of interview participants; therefore, no respondent number is reported.

A literature study was conducted to obtain theoretical and methodological references related to restaurant management information systems, POS, web-based ordering, SDLC and Waterfall development, inventory management, and the FIFO method.

The research data used for system development consisted of sales data, recipe or raw material requirement data, raw material purchasing data, and material usage data. Sales data were used to represent menu transactions, while recipe data were used to determine material requirements associated with ordered menu items. Purchasing data were used to represent materials entering inventory, while material usage data represented reductions in raw material inventory.

### 2.3. System Development

System development employed the System Development Life Cycle (SDLC) with the Waterfall model. The development stages consisted of requirements analysis, system design, implementation, and testing.

During requirements analysis, the operational processes and user requirements at ABRC were identified. The requirements included ordering, transaction processing, payment, cashier order management, kitchen order

management, raw material purchasing, inventory management, material usage, and operational information presentation.

During system design, the identified requirements were translated into system processes and data structures. UML was used to describe user interactions with the system, the main operational processes, and relationships among system components.

During implementation, the system design was translated into a web-based application using PHP as the programming language and MySQL as the database.

Testing was conducted after system implementation. Black-box Testing was used to examine the system functions according to specified inputs and expected outputs.

### 2.4. System Design

The system was designed using Unified Modeling Language (UML) as a modeling tool for translating operational requirements into system design. The modeling described the actors interacting with the system, the main processes, and the relationships among data required for application development.

The system involved three user roles: owner or administrator, cashier, and kitchen staff. The owner or administrator was responsible for managing and monitoring system information. The cashier interacted with ordering and transaction processes, while kitchen staff used order information to carry out order processing.

The design also considered relationships among menus, transactions, payments, recipes, raw material purchasing, inventory, and material usage. These relationships formed the basis for establishing data flow from transaction activities to raw material management.

Table 1. Actor and System Function Mapping

| Actor | Main Function | Processes Handled |
|---|---|---|
| Owner/Administrator | Manage and monitor system information | Data management and operational monitoring |
| Cashier | Manage customer transactions | Ordering, transactions, and payments |
| Kitchen Staff | Manage orders and materials | Kitchen orders and raw material management |

The actor-function mapping served as the basis for determining user access rights and system usage flows.

### 2.5. System Implementation

The system design was implemented as a web-based application using PHP and MySQL. The implementation translated the identified operational requirements into functional system modules.

The implemented system covers menu and ordering, payment, cashier order management, kitchen order management, raw material purchasing, material usage, and presentation of operational information through the owner dashboard.

The implementation also connects recipe information with raw material usage. Recipe data provide the material requirements associated with an ordered menu item, while purchasing information provides the inventory sequence required by the FIFO mechanism.

### 2.6. FIFO Implementation

The First In First Out (FIFO) method was applied to raw material inventory management. The principle used was that raw materials received earlier were prioritized for use earlier.

FIFO implementation used to purchase information and material receipt dates to determine the inventory sequence. Recipe data were used to determine material requirements based on the ordered menu. These requirements then became the basis for the material usage process. The use of receipt sequence as the basis for material usage is consistent with previous FIFO research in bakery and inventory environments (Mandalangi et al., 2025; Sekti et al., 2024; Surya Jati et al., 2024).

The required material quantity was determined from the number of menu items ordered and the material requirement specified in the recipe:

$$Q_u = Q_m \times Q_r \quad (1)$$

Where $Q_u$ is the quantity of material used, $Q_m$ is the quantity of menu items ordered, and $Q_r$ is the material requirement for one menu item based on the recipe.

During material usage, the system prioritized inventory from the batch with the earliest receipt date. If the quantity available in the earliest batch was insufficient to meet the requirement, the usage process continued with the subsequent batch according to its chronological order.

The FIFO implementation was subsequently examined through functional testing to determine whether the material usage mechanism conformed to the specified FIFO principle.

The formula in Equation (1) represents recipe-based material requirements. It is not presented as a quantitative FIFO valuation formula. No quantitative FIFO calculation involving inventory value or complete

batch depletion is reported because the available research data do not provide a sufficiently complete and validated dataset for such analysis.

### 2.7. System Testing

System testing was conducted using Black-box Testing from the user perspective. The testing examined system functionality through predetermined inputs and expected outputs without examining the internal program code structure. The documented testing covered login, ordering, payment, cashier order management, kitchen order management, raw material purchasing, raw material inventory, material usage, FIFO, and reporting.

For each testing scenario, an input was provided to the system and the resulting output was compared with the expected output. A function was considered successful when the actual output corresponded to the expected output. FIFO testing specifically examined whether materials from the inventory batch with the earliest receipt date were prioritized during the material usage process.

### 2.8. Data Analysis

Data analysis was conducted according to the type and purpose of the available research evidence. First, information obtained from observation and interviews was analyzed to identify operational processes, problems, and system requirements.

Second, recipe and raw material requirement data were analyzed to establish the relationship between menu items and their required materials. This relationship was used as the basis for the material usage mechanism.

Third, purchasing information and material receipt dates were analyzed to establish the chronological inventory sequence required by FIFO.

Fourth, the system testing results were analyzed by comparing the expected output with the actual output recorded for each documented testing scenario.

The analysis was limited to system requirements, system implementation, recipe-based material requirements, FIFO logic, and functional testing. No quantitative before-and-after performance analysis was conducted because the required performance measurements were not available.

## 3. RESULTS AND DISCUSSION

### 3.1. System Implementation

The implementation resulted in a Web-Based Restaurant Management Information System at Adamsafee Bakery, Resto, and Cafe (ABRC). The system connects several operational processes within a single web-based application.

The implemented functions cover menu and ordering, payment, cashier order management, kitchen order management, raw material purchasing, material usage, and presentation of operational information through the owner dashboard. The implementation evidence is presented through the system interfaces in Figures 2–7.

#### 3.1.1. Menu and Ordering

The menu interface displays available products and supports the creation of customer orders.

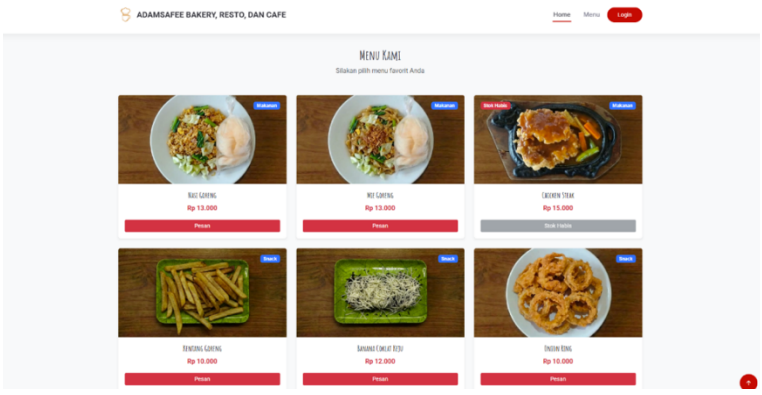


Figure 2. Menu and Ordering Interface of the ABRC System

The menu interface demonstrates that product selection can be connected to the creation of customer orders. The menu function therefore forms part of the transaction flow rather than functioning only as a product information page.

This implementation is consistent with previous research on web-based food ordering systems, which addressed the transition from manual ordering to computerized ordering (Sari et al., 2024).

The evidence supports the availability of the menu and ordering function. It does not establish that the ordering process is faster or more efficient than the previous process.

### 3.1.2. Payment

The payment interface is used to complete a transaction after an order has been created.

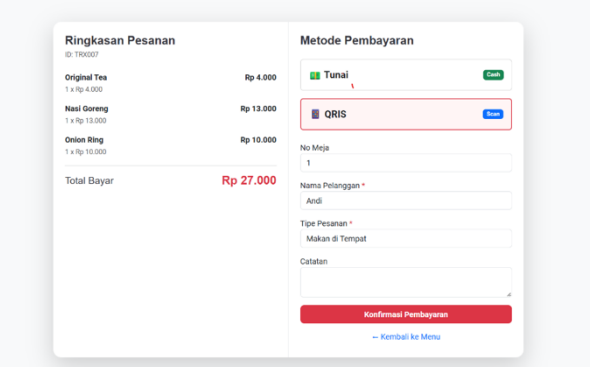


Figure 3. Payment Page of the ABRC System

The payment implementation connects the order information with transaction completion. This function is consistent with the role of POS systems in supporting transaction processing in culinary businesses (Gani et al., 2023).

The evidence demonstrates the availability of the payment function. It does not establish a quantitative improvement in payment processing time or payment accuracy.

### 3.1.3. Cashier Order Management

The system provides an order-management interface for the cashier.

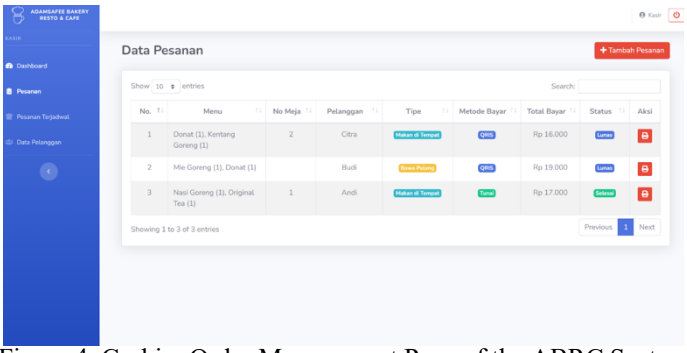


Figure 4. Cashier Order Management Page of the ABRC System

The interface allows the cashier to access and manage incoming order information. The implementation connects customer orders with cashier-side transaction management.

The result demonstrates the availability of the cashier order-management function. It does not provide quantitative evidence of improved cashier performance.

### 3.1.4. Kitchen Order Management

Orders processed through the system can be accessed by the kitchen.

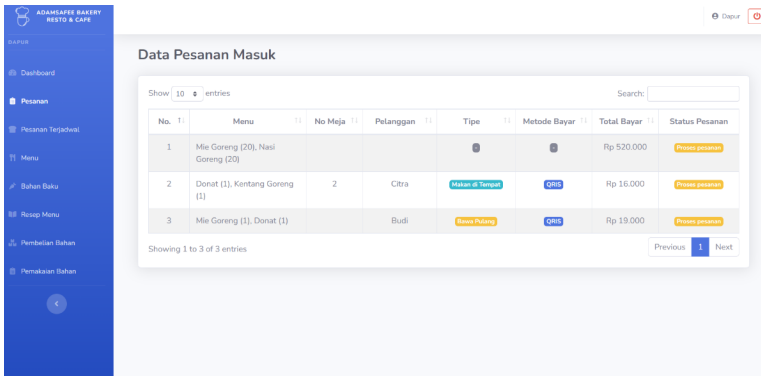


Figure 5. Kitchen Order Management Page of the ABRC System

The kitchen interface provides order information required for order processing. This creates a functional connection between the ordering process and kitchen operations.

The result demonstrates that order information can be provided to the kitchen through the system. It does not establish a quantitative reduction in kitchen processing time.

### 3.1.5. Raw Material Purchasing

The system provides a raw material purchasing interface for recording materials entering inventory.

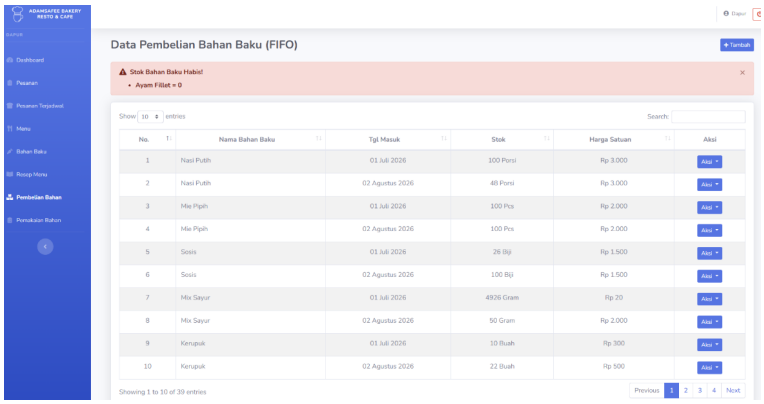


Figure 6. Raw Material Purchasing Page of the ABRC System

Purchasing information forms part of the inventory record and provides information relevant to the receipt sequence used by FIFO. The implementation therefore connects raw material purchasing with subsequent inventory management.

This is consistent with the relevance of structured inventory information in restaurant environments (Sujana, 2022).

The evidence confirms the purchasing function and its relationship to inventory management. It does not establish quantitative changes in purchasing costs or inventory accuracy.

### 3.1.6. Owner Dashboard

The system provides an owner dashboard for presenting operational information.

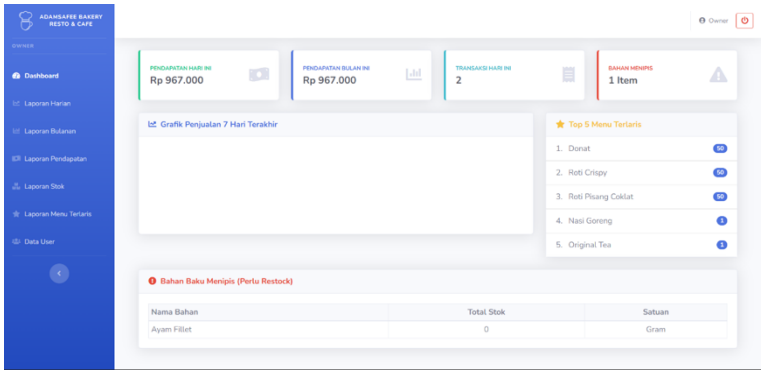


Figure 7. Owner Dashboard of the ABRC System

The dashboard presents operational information generated from the system's recorded activities. It provides the owner or administrator with access to information related to system operations.

The implementation demonstrates the availability of an owner-oriented information interface. It does not establish that managerial decision-making or business performance improved quantitatively.

Overall, the implemented components demonstrate the main operational flow:

ordering → payment → cashier order management → kitchen order management → raw material management → owner information

The implementation therefore provides a system-level connection between restaurant operational activities and raw material management.

The result is consistent with previous restaurant management research showing that web-based systems can organize restaurant information and operational processes (Ismawan & Cahyono, 2025; Wijaya & Wahyuningtyas, 2024). However, the ABRC result is interpreted specifically as evidence of system implementation rather than evidence of quantitative operational improvement.

### 3.2. FIFO Implementation

The FIFO mechanism in the ABRC system uses the receipt date of inventory as the basis for determining material usage priority.

Raw material purchasing information provides the information required to distinguish inventory according to its receipt sequence. When materials are required to fulfill a transaction, the required quantity is determined from recipe data, after which the system processes material usage by prioritizing inventory with the earliest receipt date.

The implemented FIFO logic follows the principle that materials received earlier are prioritized for use earlier. When the available quantity in an earlier batch is insufficient, material usage proceeds to the subsequent batch according to the inventory sequence.

This mechanism is consistent with previous research that applied FIFO to web-based raw material inventory in a bakery environment (Surya Jati et al., 2024). It is also consistent with research applying FIFO to web-based inventory management (Mandalangi et al., 2025; Sekti et al., 2024).

The examination of the implemented system shows that the FIFO mechanism operates according to the specified receipt-date principle. The functional testing result indicates that the system uses materials according to the batch receipt-date sequence.

This provides functional evidence that FIFO has been implemented in the material usage process. However, the available results do not provide a complete quantitative FIFO calculation involving material usage values, remaining inventory quantities, or changes in inventory value. The available research datasets also do not provide a sufficiently complete and validated relationship among all sales records, menu items, recipes, material usage, and purchasing batches to support a comprehensive quantitative FIFO analysis.

Therefore, the FIFO result is interpreted as functional verification of the implemented logic, not as evidence of quantitative changes in inventory value, material waste, inventory accuracy, or operational efficiency.

### 3.3. Black-box Testing Results

Black-box Testing was conducted on the implemented system functions. The documented results contain ten testing scenarios covering authentication, ordering, payment, cashier order management, kitchen order management, raw material purchasing, raw material inventory, material usage, FIFO, and reporting.

Table 2. Results of Black-box Testing of the ABRC System

| No. | Feature | Expected Result | Actual Result | Status |
|---|---|---|---|---|
| 1 | Login | The system provides access according to user privileges | The system provides access according to user privileges | Successful |
| 2 | Ordering | The order is stored and transaction information is updated | The order is stored and transaction information is updated | Successful |
| 3 | Payment | Payment can be processed and the transaction status is updated | Payment can be processed and the transaction status is updated | Successful |
| 4 | Cashier Orders | Order data can be managed by the cashier | Order data can be managed by the cashier | Successful |
| 5 | Kitchen Orders | Orders can be received and processed by the kitchen | Orders can be received and processed by the kitchen | Successful |
| 6 | Purchasing | Purchasing data are stored and inventory is updated | Purchasing data are stored and inventory is updated | Successful |
| 7 | Raw Material Inventory | The system displays inventory information | Inventory information can be displayed | Successful |
| 8 | Material Usage | Material usage is recorded and inventory is updated | Material usage is recorded and inventory is updated | Successful |
| 9 | FIFO | Materials from the batch with the earliest receipt date are used first | The system uses materials according to the batch receipt-date sequence | Successful |
| 10 | Reports | The system displays reports according to the specified parameters | Reports can be displayed according to the specified parameters | Successful |

The testing results show that the documented system functions operated according to their specified expected outputs. The tested functions cover user authentication, ordering, payment, cashier and kitchen order management, raw material management, material usage, FIFO, and reporting.

For FIFO, the actual result indicates that the system prioritizes materials according to the receipt-date sequence of the batches. This provides functional evidence that the FIFO logic implemented in the system operates according to the principle used in this study.

The testing results should be interpreted as functional testing results. They do not provide evidence of the magnitude of improvements in operational efficiency, inventory accuracy, cost savings, material waste, or overall operational performance because the study did not conduct quantitative measurements of these indicators.

### 3.4. Discussion

The implementation results indicate that the ABRC system connects several operational activities that are closely related to one another. Ordering initiates the transaction flow, after which transaction information can be managed by the cashier and forwarded to the kitchen. On the inventory side, purchasing data form the basis for inventory records, while recipe data connect menu items with their required materials.

This integration creates a relationship between transaction activities and raw material management rather than treating each process as an independent function. The system therefore addresses a broader operational scope than a system focused only on transaction recording or only on inventory management.

Previous research has demonstrated the use of web-based systems for POS and transaction management (Gani et al., 2023; Marisa & Yuarita, 2017; Nugraha et al., 2021). Other studies have addressed restaurant management and food ordering through web-based applications (Ismawan & Cahyono, 2025; Sari et al., 2024; Wijaya & Wahyuningtyas, 2024). Research in culinary customer relationship management has also addressed ordering and customer information management (Jayanti & Kuswanto, 2023; Syafa'ah et al., 2025). The ABRC implementation brings these operational requirements into the specific context of a bakery, restaurant, and cafe and connects them with raw material management.

The FIFO implementation forms part of this integration. Receipt-date order is used to determine which materials are prioritized during the usage process. The functional testing results show that this logic can be executed according to the FIFO principle.

The FIFO mechanism is consistent with previous research applying FIFO to bakery raw material inventory and web-based inventory management (Mandalangi et al., 2025; Sekti et al., 2024; Surya Jati et al., 2024). However, the contribution of the ABRC implementation is positioned at the integration level: FIFO is implemented as part of the raw material usage process within a restaurant management information system rather than treated as a separate inventory calculation.

The relationship between menu transactions, recipes, purchasing, inventory, and material usage is also important for interpreting the system. Recipe data provide the basis for determining material requirements, while purchasing receipt dates determine the priority sequence of inventory usage. The system therefore provides a functional pathway from restaurant transaction activities toward raw material usage.

The available research data, however, do not support a complete quantitative evaluation of this relationship. Although sales and recipe-related information are available, the available datasets do not provide a sufficiently validated transaction-to-batch relationship for comprehensive quantitative FIFO analysis. Consequently, the study does not report quantitative material consumption, inventory-value changes, waste reduction, or inventory-accuracy improvement.

This limitation also affects the interpretation of Black-box Testing. Successful testing indicates that the tested functions produced outputs corresponding to their specified expected results. It does not demonstrate the magnitude of operational improvements compared with the previous manual process.

Therefore, the principal contribution demonstrated by the evidence is the implementation of a web-based Restaurant Management Information System that integrates restaurant operational processes with raw material management and applies FIFO to material usage. The findings provide functional evidence of implementation and operation, while quantitative evaluation of operational impact remains outside the available evidence.

## 4. CONCLUSION

This study developed a Web-Based Restaurant Management Information System at Adamsafee Bakery, Resto, and Cafe (ABRC) to integrate the main restaurant operational processes with raw material management. The implemented system supports menu and ordering, payment, cashier order management, kitchen order management, raw material purchasing, material usage, and the presentation of operational information through the owner dashboard.

The First In First Out (FIFO) method was integrated into raw material management by using inventory receipt dates as the basis for prioritizing material usage. Recipe information was used to determine material requirements associated with ordered menu items, while inventory batches were prioritized according to their receipt sequence. The FIFO mechanism was therefore implemented as part of the material usage process.

Black-box Testing demonstrated that the documented system functions operated according to their specified expected outputs. The FIFO testing scenario also showed that the implemented mechanism followed the specified receipt-date sequence. These findings provide functional evidence that the implemented system operates according to the defined system requirements and FIFO logic.

However, this study did not quantitatively evaluate changes in operational efficiency, inventory accuracy, costs, material waste, or overall performance. The available research datasets also did not provide a sufficiently

complete and validated relationship between sales, recipes, material usage, and inventory batches to support comprehensive quantitative FIFO analysis. Therefore, the findings should be interpreted as evidence of system implementation and functional operation rather than quantitative evidence of operational improvement. Further research can conduct quantitative performance and FIFO evaluation using complete transaction-level, recipe, purchasing-batch, material-usage, and inventory-balance data.

## ACKNOWLEDGEMENTS

The authors would like to thank Adamsafee Bakery, Resto, and Cafe (ABRC) for providing the opportunity and support for conducting this research, as well as for providing the information and data required for the system development and testing processes. The authors also acknowledge the parties who provided guidance and support throughout the research, system development, and preparation of this article.

## REFERENCES

Gani, A. G., Dewi, P. F., & Sugiharto, A. (2023). Sistem informasi Point of Sale berbasis web pada Dapur Caringin Tilu Bandung. JSI (Jurnal Sistem Informasi) Universitas Suryadarma, 10(2), 11–22. https://doi.org/10.35968/jsi.v10i2.1072

Ismawan, P., & Cahyono, D. (2025). Analisis dan desain sistem informasi manajemen restoran berbasis web studi kasus Pecel Kawi Hj. Musilah. Jurnal Informatika Teknologi dan Sains (JINTEKS), 7(1), 158–165. https://doi.org/10.51401/jinteks.v7i1.5212

Jayanti, N. M. D., & Kuswanto, V. (2023). Analisis dan perancangan sistem informasi Electronic Customer Relationship Management (E-CRM) berbasis web pada CV. Rey Multi Rasa. ALGOR, 5(1), 66–81. https://doi.org/10.31253/algor.v5i1.2364

Mandalangi, R. J., Sara, K., & Mando, L. B. F. (2025). Web-based inventory information system using First-In First-Out (FIFO) algorithm at CV Dewangga. Jurnal Ilmiah Sistem Informasi, 4(3), 523–543. https://doi.org/10.51903/qmw5sk61

Marisa, F., & Yuarita, T. G. (2017). Perancangan aplikasi Point of Sales (POS) berbasis web menggunakan metode siklus hidup pengembangan sistem. Jurnal Teknologi dan Manajemen Informatika, 3(2), 167–171. https://doi.org/10.26905/jtmi.v3i2.1514

Nugraha, P. G. S. C., Wardani, N. W., & Sukarmayasa, I. W. (2021). Rancang bangun sistem informasi software Point of Sale (POS) dengan metode Waterfall berbasis web. JST (Jurnal Sains dan Teknologi), 10(1), 92–103. https://doi.org/10.23887/jstundiksha.v10i1.29748

Sari, S. S., Supriyanto, E., Eniyati, S., & Khristianto, T. (2024). Bangun sistem informasi pemesanan makanan berbasis web pada Omah Makan Jawa (OMJ) Purwodadi. INTECOMS: Journal of Information Technology and Computer Science, 7(4), 1275–1281. https://doi.org/10.31539/intecoms.v7i4.11003

Sekti, B. A., Gusti, A. P., & Erzed, N. (2024). Perancangan sistem informasi stok barang berbasis web dengan metode FIFO. Jurnal Teknologi Informatika dan Komputer, 10(2), 506–518. https://doi.org/10.37012/jtik.v10i2.2253

Sujana, W. (2022). Perancangan sistem informasi persediaan barang pada Restoran Burger King Lotte Shopping Avenye Jakarta. Simpatik: Jurnal Sistem Informasi dan Informatika, 2(1), 1–10. https://doi.org/10.31294/simpatik.v2i1.1068

Surya Jati, F., Permatasari, H., & Pramono, P. (2024). Sistem informasi persediaan bahan baku menggunakan metode First-In First-Out (FIFO) berbasis website pada Toko Roti Trimo Lowung Karanganyar. Innovative: Journal of Social Science Research, 4(4), 10997–11013. https://doi.org/10.31004/innovative.v4i4.14262

Syafa'ah Kusuma Putri, N., Setiawan, R. R., & Fithri, D. L. (2025). Implementasi metode Customer Relationship Management untuk kepuasan pelanggan dan pemesanan makanan pada Pondok Roso Rumah Makan dan Catering. Jurnal Teknik Indonesia, 4(2), 48–62. https://doi.org/10.58860/jti.v4i2.637

Wijaya, A., & Wahyuningtyas, E. (2024). Rancang bangun sistem informasi manajemen restoran pada King Fried Chicken. Jurnal Pesona Informatika, 1(1), 13–25.