

Integrated Web-Based Cashier System for Ordering at Water Depot (Case Study: Dira Water)

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Abstract

Management process transaction sales and orders at the Dira Water Depot previously still done manually so that often cause problem like error recording, delays in transaction processing, discrepancies stock, and the difficulty manufacturing report sales. Research This aim For develop system cashier integrated web- based with feature orders for operational processes can walk more efficient, accurate, and structured. Method research used is Research and Development (R&D) with approach engineering device soft using the Waterfall model which includes analysis requirements, design, implementation, and testing system. Data collection was carried out through observation, interviews, and documentation. System built use technology web -based and includes feature main in the form of user login, management goods, categories, suppliers, purchasing, sales (POS), ordering, user management, and report sales and stock. Test results use method black box show that all over function system walk with Good in accordance need functional. System capable take notes transaction in a way automatic, manage stock in real-time, as well as produce report sale in a way fast and accurate. Integration between system cashier and ordering also provide improvement efficiency regarding the recording process ordering and delivery. With Thus, the system This proven can help increase effectiveness operational and quality services at Dira Water Depot.

Keywords: System Cashier, Web-Based POS, System Ordering, Stock Management, Water Depot, Dira Water, Blackbox Testing, System Information.

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Introduction

In today's digital era, the development of information technology has penetrated various fields. sector business Micro, small, and medium enterprises (MSMEs), including refill drinking water depot businesses. Traditional water depot businesses in general Still depend on manual recording or simple system in managing transactions, orders, stock as well as financial reports, so that prone to errors, delays order fulfillment, and less transparency in control operational. For example, research shows that at a drinking water depot in the Regency Barru, marketing and sales system Still smartphone -based independently because it is not yet fully integrated, so that management transactions, employee bonuses, and reports sale Still experiencing obstacles. (Lukman, 2016)

On the other hand, digitalization of marketing and ordering systems show real benefits for drinking water depots. A study at the Amary Water Depot showed that development of ordering and sales information systems web- based can make it easier customers in making orders, increasing efficiency operational business, as well as providing convenience in presentation financial statements. (Sari et al., 2023)

But in practice Still Many water depots have not implemented a cashier system web - based integrated with online ordering and management stock in real time, so management transactions, order monitoring, delivery and record keeping income Still conducted separately. For example, research at the RO & Mineral Depot Rizky reveal that recording transactions and receivables Still done manually in books, so that the admin has difficulty in tracking data and analysis report. (Mayangsari, 2019)

With this background, the implementation of the cashier system web- based integrated with modules Online ordering at water depots like Dira Water has become urgent. This system not only allows recording transactions and management stock automatically, but also allows customers to order through the web interface, as well as provide a management dashboard real-time business that can be accessed by the owner business anytime. This is expected can increase efficiency operational, speed up service customers, as well as increase accuracy and transparency in financial and stock records.

Literature Review

1. Web-Based Information Systems and Applications

System information is combination between human, device hard, device software, procedures, and databases used For collect, process, store, and distribute information For support operational and decision-making processes decision. In context business retail such as drinking water depots content reset, system information used For automate transaction processes, recording sales, management stock, up to booking customer.

Application web- based now be one of solution dominant Because own superiority accessibility high, can accessible from various device, no need installation local, as well as easy For updated in a way centralized. In research Previously, proven web applications increase speed transactions, data accuracy, and transparency activity business (Rahman & Setiawan, 2021).

2. Cashier System (Point of Sale/POS)

System cashier or Point of Sale (POS) is the system used For processing transaction sale in a way computerized. Function Main POS include :

1. Recording Sale in a way automatic.
2. Calculation of total price and tax.
3. Management stock goods based on transaction in – out.
4. Printing receipt.
5. Transaction data storage For need report sale.

Research by Sari et al. (2020) states that Web -based POS system helps MSMEs minimize error recording and improving transaction process efficiency up to 40%. Meanwhile study Hidayat

(2022) emphasized that POS integration with centralized database give level accuracy more stock Good compared to manual system.

In case of water depot, the use of POS becomes important Because transaction relatively high (daily), number customer many, and there are need management gallon, stock content repeat, and booking between.

3. Integration of Cashier System and Ordering System

Integration between POS and module online ordering is one of the innovation important in business service such as water depots. Integration This produce :

1. Unified transaction flow between ordering, payment, and delivery.
2. Synchronization real-time stock, so that minimize risk out of stock goods.
3. Speed processing orders and transactions.
4. Analytic more sales accurate based on order and transaction data cashier.

According to Hakim's research (2021), POS integration –ordering produce improvement 35–50% efficiency in businesses that have an ordering process routine. In the drinking water business content repeat, integration This very important Because booking more often originate from customer remains, so that need a system that can take notes schedule and transactions in a way automatic.

Research Methodology

1. Types of Research

Study This is study applied research that aims produce solution system information in the form of system cashier integrated web- based with Orders at Dira Water Depot. Type research used is research and development (R&D) with focus on design, development, and evaluation system.

2. Research Approach

The approach used is approach qualitative – quantitative (mixed methods) :

1. Approach qualitative used For :

- a. Identifying need users (owner, cashier, courier) delivery person, customer).
- b. Reviewing the business process of water depots in general direct through observation and interviews.

2. Approach quantitative used For :

- a. Test performance system through measurement efficiency time transactions,
- b. Validation function through SUS (System Usability Scale) questionnaire or Likert scale.

3. Research Location and Subjects

Study conducted at Dira Water, a drinking water depot content repeat located at (content location).

Subject study includes :

- a. Owner business (owner),
- b. Cashier,
- c. Courier introduction,
- d. Customers who do booking.

4. Data Collection Techniques

1. Observation

Researchers observe :

- a. ordering process,
- b. Transaction cashier,
- c. Management stock gallon,
- d. Recording report sale daily.

2. Interview

Done to the owner and cashier For get :

- a. Information about constraint operational,
- b. Need feature system,
- c. Mechanism channel ordering and delivery.

Results

Research results obtained from the process of needs analysis, design, development, and cashier system testing web- based integrated with features orders at the Dira Water Depot. All The findings in this chapter focus on the system's performance in solving problem operational issues that previously appeared in manual processes, such as delays recording transactions, discrepancies stock, and recording booking customers who are often not well documented.

The research results are presented based on stages system implementation, starting from design interfaces, modules main building includes module cashier, module ordering, management stock and reports sales to the integration process between modules. In addition, this chapter also presents system evaluation through testing functional (blackbox testing) and assessment user (usability testing), to ensure that the system meets Dira Water's operational needs and provides significant performance improvements compared to the previous process.

Thus, this chapter is expected can provide an overview comprehensive regarding the effectiveness of the resulting system, both from a technical perspective and benefit operational results obtained by the user. These results are also become basics of drawing conclusions and recommendations in the chapter next.

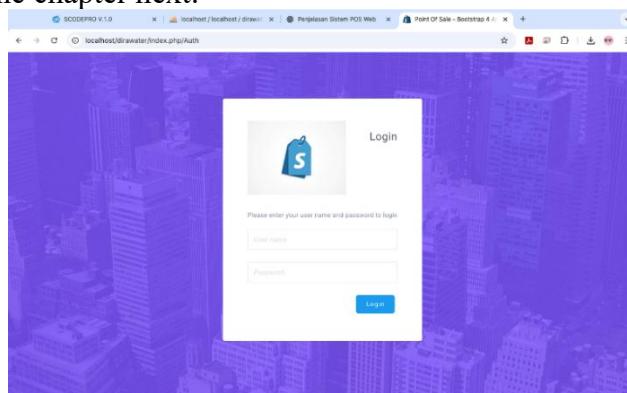


Figure 1. Dira Water Cashier and Ordering System Login Page

Login Menu is page initial used by the user For access System Cashier (POS) and Ordering at Dira Water Depot. Features This functioning as gate security For ensure that only users who have accounts and rights valid access that can be enter to in system. On the login page, the user requested enter username and password. The data will verified by the system with match it to the database. If the data matches, the user can enter to the dashboard. There is a login menu, transaction data security, orders and reports Dira Water Depot operations can awake. Besides that, login is also possible distribution right access so that every users only can use appropriate features with duties and responsibilities he answered.

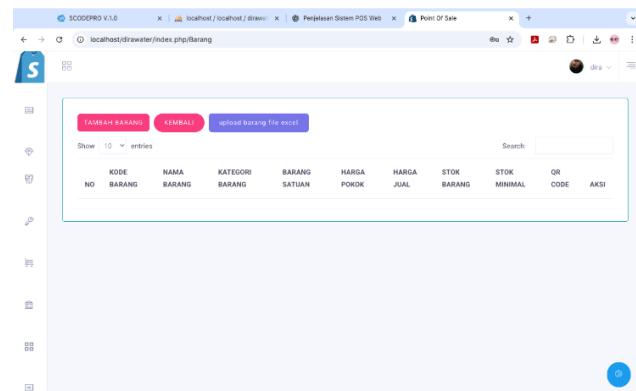


Figure 2. Display of the Item Menu on the Dira Water POS System

The Items Menu is a feature used to manage all product data at Depot Dira Water. In this menu, the admin can add new items, edit data, delete items, and arrange stock. The displayed item data This menu includes the item code, item name, category, cost price, selling price, stock, and minimum stock. This menu helps ensure product availability is always controlled and streamlines the sales process in the POS system.

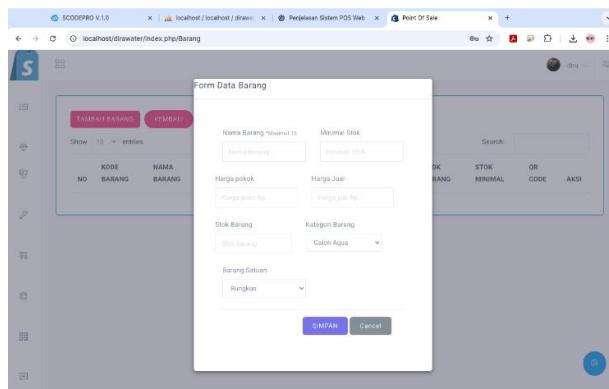


Figure 3. Item Data Input Form on the Dira Water POS System

Item Data Form used For add or change information products in the Dira Water Depot POS system. This form containing some important inputs like Name goods, minimum stock, price principal, price sell, stock goods, categories goods and units goods. Users Enough fill in all over required columns, then pressing knob Save For save data to database. This form help ensure item data recorded with complete and correct so that make it easier management stock and transaction processes in the system.

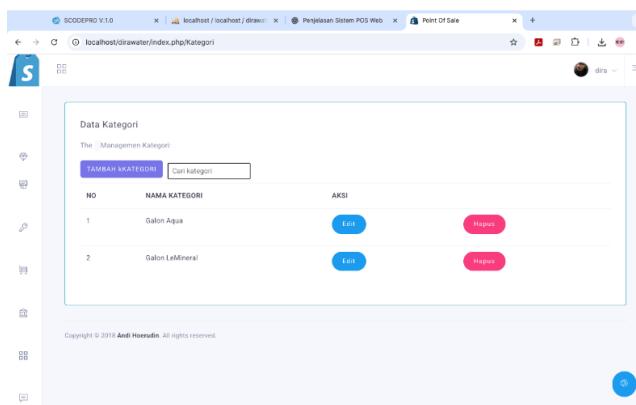


Figure 4. Item Category Management Page

Category Menu used For grouping goods based on types in the Dira Water Depot POS system. In this menu, the admin can add category new, edit Name category, or delete existing categories No used. All listed categories displayed in form table complete with Edit and Delete buttons, as well as available column search For make it easier find category certain. This menu make things easier managing goods data to be more neat and structured.

Figure 5. Transaction Form Purchase of Goods from Suppliers

Purchase Menu Used to record the process of purchasing goods from suppliers at the Dira Water Depot. On this form, the admin selects supplier name, purchase date, item code, and Enter the quantity of items purchased and the invoice number. The system will automatic displays details such as item name, unit, cost price, and selling price based on the selected item data. After the data is complete, the user pressing knob Shop to add it to your shopping list, then press Done to save all over purchases. This menu ensures recording more incoming stock accurate and organized.

Figure 6. Transaction Page Sales on the Cash Register System (POS)

Sales Menu is features used For do transaction sale in a way directly in the Dira Water Depot POS system. On this form, the cashier enter code goods and systems automatic display information like Name goods, units, stock available, as well as price sell. Cashier Then input amount purchased items and press knob Shopping For add it to the transaction list. This menu also provides an Invoice section which displays customer shopping details, total price, and options to complete transactions. This feature helps the sales process become faster, more accurate, and integrated with reduction stock automatically.

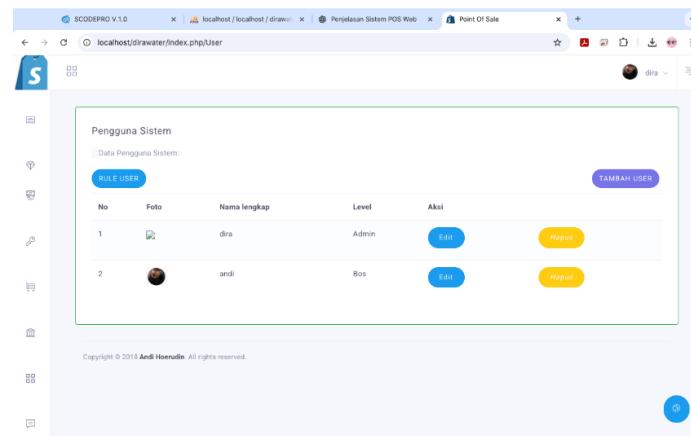


Figure 7. User List and System Access Rights Page

This page displays list of users who have access to the system. Main content of the page:

- User table contains : number, photo, full name, level (Admin/Boss), and action.
- Knob Edit to change user data.
- Knob Delete to delete the user.
- Knob Add User to add a new account.
- There is also a Rule User menu to set access rights.

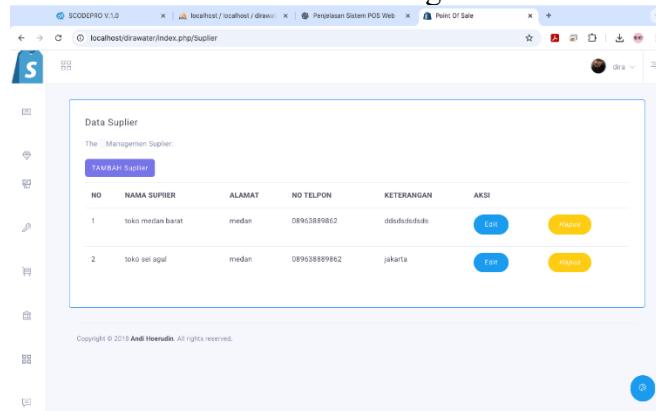


Figure 8. Page Supplier Data Management

This page is used for managing supplier data. In the section table there is :

- Supplier Name
- Address
- Number Telephone
- Information
- Knob Edit and Delete

In section on there is knob Add Supplier For add new suppliers.

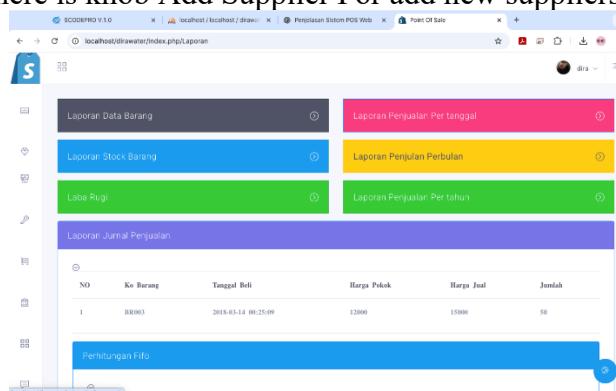


Figure 9. Report Page (Goods, Stock, Sales, Profit and Loss, Journal)

Page report provide various type reports that can selected, such as :

- a. Goods Data Report
- b. Stock Report
- c. Report Profit Make a loss
- d. Report Sales (per date, per month, per year)
- e. Report Journal Sales

After selecting one, the system display report details related, such as code goods, date buy, price principal, price sale, quantity, etc.

1 Login Menu Testing

Source features : login page only can accessible with valid username & password

Table 1. Login Menu Testing

No Test Scenario	Input	System Process	Expected Output	Status
1 Login with valid data	Correct username, correct password	The system matches with the database	Enter the main dashboard	Pass / Fail
2 Login with wrong password	Username is correct, password is incorrect	Verification rejected	Message: "Wrong password"	Wrong Pass / Fail
3 Login without filling in any of the fields	Empty	Input validation	Message: "Field cannot be empty"	Field Pass / Fail
4 User login without access rights	Inactive account	User status system	check Message: "Access denied"	Access Pass / Fail

2 Testing the Item Menu (Manage Item Data)

Features : add, edit, delete, display goods

Table 2. Testing the Item Menu (Manage Item Data)

No Test Scenario	Input	Process	Expected Output
1 Add item data	Item name, price, stock	Save to database	Data appears in the table
2 Add item data without filling in mandatory fields	Empty field	Form validation	Error message
3 Edit item data	Name change /price	Update database	Data changes according to input
4 Delete item	Click Delete	Confirmation system → delete	Item deleted from table
5 Search for items	Keywords	Data filter	Matching data appears

3 Testing the Goods Data Form

Features : complete input goods (minimum stock, price subject, unit, category)

Table 3. Testing the Goods Data Form

No Scenario	Input	Expected Output
1 Save the goods form with complete data	All fields are filled	Data saved
2 Invalid price input	Price of letters / numbers negative	An error message appears
3 Minimum stock input is greater than stock	Illogical numbers	Warning message
4 Choose available categories	Category dropdown	Category displayed and saved

4 Product Category Menu Testing

Features : add, edit, delete categories

Table 4. Product Category Menu Testing

No Scenario	Input	Output
1 Add category	Category name	Shown in table category
2 Edit category	New name	Category changed
3 Wipe category	Click Delete	Category deleted
4 Search categories	Keywords	Only related categories appear

5 Testing the Purchase Menu (Incoming Stock)

Feature Purchase : select supplier, input goods, quantity, save purchase

Table 5. Testing the Purchase Menu (Incoming Stock)

No Scenario	Input	Output
1 Add item purchase	Supplier, goods, qty	Stock increases according to qty
2 Add purchases without suppliers	Empty	Error message
3 Add purchase qty 0	0	Invalid message
4 Save transaction purchase	Complete data	Data is saved & displayed in the report

6 Point of Sale (POS) Menu Testing

Info from document : display stock, price sale, invoice, total payment

Table 6. Point of Sale (POS) Menu Testing

No Scenario	Input	Output
1 Adding items to a transaction	Item code, qty	Goods entered into the invoice
2 Qty exceeded stock	Stock 10, input 20	Message: "Insufficient stock "
3 Deleting transaction items	Click delete item	Item missing from invoice
4 Finish transaction	Click Finish	Stock is reduced automatic
5 Print invoice	Click Print	Invoice appears / prints

7 Testing Reports (Goods, Stock, Sales, Profit and Loss, Journal)

Table 7. Testing Reports (Goods, Stock, Sales, Profit and Loss, Journal)

No Scenario	Input	Output
1 Showing report sale daily	Select date	Table sales appear
2 Showing monthly report	Select month & year	Reports according to period
3 Showing report stock	Click the stock menu	Latest stock come on stage
4 Download/print report	Click Print	File/pdf displayed or printed
5 Report filter not found	Blank period	"Data not available " message

Conclusion

Based on results analysis requirements, design, implementation, and testing system, can concluded that system cashier web -based developed succeed fulfil need Dira Water Depot operations. System This capable integrate sales processes direct via POS with booking customer in a way computerized so that all over transaction can recorded with more fast, accurate, and structured compared to the previous manual process. Testing use method black box show that all over feature main includes login, management goods, grouping category, transaction purchase, transaction sales, user settings, supplier management, and presentation report works in accordance with need functional that has been set. Every module capable receive input with correct, process data with precisely, and produces the appropriate output. This is confirm that

system worthy used as operational aids daily. Besides that, integration between system cashier and system booking give improvement significant to efficiency and accuracy recording transactions. Features report sales and stock make it easier party management in monitor performance effort, doing evaluation, as well as take decision data -based. With Thus, the system This No only increase effectiveness of business processes, but also provides mark plus for management of water depots overall.

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