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Design of an order management website and automatic queue number system to improve service efficiency in MSMEs Bakso Mas Anto Marelan

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ABSTRACT

Micro, Small, and Medium Enterprises (MSMEs) in the culinary sector require fast, organized, and efficient services to improve customer satisfaction. Bakso Mas Anto Marelan is one of the MSMEs that still manages orders and queues manually, which often causes problems such as unorganized queues, order recording errors, and service delays. This study aims to design a website for order management and an automatic queue number system to improve service efficiency at Bakso Mas Anto Marelan. The research method includes needs analysis, system design, implementation, and application testing. The designed website allows operators to manage order data, monitor order status, and automatically generate queue numbers. The automatic queue number system helps arrange customer service order fairly and transparently. The results of this study indicate that the implementation of an order management website and an automatic queue number system can accelerate service processes, reduce recording errors, and improve queue management. Therefore, the designed website is expected to be an effective solution to enhance service efficiency in MSMEs, particularly at Bakso Mas Anto Marelan.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are one of the sectors that play an important role in the economic growth of the community [1][2]. MSMEs in the culinary sector, especially ready-to-eat food businesses, have a high transaction rate and require fast and regular service in order to provide customer satisfaction. Efficient service is one of the main factors in improving the quality of business and the competitiveness of MSMEs [3].

Bakso Mas Anto Marelan is one of the MSMEs engaged in the culinary sector and serves customers directly at the business location. In its operational activities, the ordering process

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and queue management are still carried out manually, namely customers order directly at the cashier desk and wait for the order to be called based on simple memories or notes. This condition often causes several problems, such as irregular queues, customers who feel they miss their calls, and difficulties for business actors in monitoring the number of orders being processed.

Another problem that often occurs is the increase in the number of customers at certain hours, such as lunch and dinner, causing queue and service to be less than optimal. The manual order recording process also has the potential to cause errors, such as orders that are confused or forgotten. This can have an impact on declining customer satisfaction and service efficiency at Bakso Mas Anto Marelan.

Along with the development of information technology, the use of websites as a medium for business management can be a solution to overcome these problems. Order management websites allow MSME actors to record, monitor, and manage orders in a structured and real-time manner [4][5]. A website is a collection of interconnected pages of information that can be accessed over an internet network using a web browser [6][7]. In addition, the implementation of an automatic queue number system can help manage customer service sequences fairly and transparently, so that the service process becomes more orderly and efficient. Management is the process of planning, organizing, implementing, and supervising an activity to achieve a set goal [8][9]. Automation is a condition in which a process can run on its own with the help of technology without the need for direct human intervention [10][11]. With the design of an order management website and an automatic queue number system, it is hoped that Bakso Mas Anto Marelan can improve service efficiency, minimize errors in order recording, and provide a better service experience to customers. An order is a request for goods or services made by a customer to a service provider [12][13]. A system is a collection of components that are interconnected and work together to achieve a specific goal [14][15]. A queue number is a service sequence identity given to customers to determine their service turn [16][17]. Therefore, this research is focused on designing an order management website and an automatic queue number system as an effort to improve the quality of service at Bakso Mas Anto Marelan MSMEs.

METHODS

Ingredients

Research materials are resources used to support the process of designing and creating an order management website and automated queue number system. The materials used in this study consist of hardware, software, and research data.

1. Hardware
   The hardware used is a laptop or computer used for the process of designing, developing, and testing a website.
2. Software
   The software used in this study includes:
   1. Operating system as a working medium
   2. Web browser to run and test websites
   3. XAMPP as a local web server
   4. Code editors (such as Notepad++ or Visual Studio Code)
   5. MySQL database as a data storage medium
3. Research Data
   The data used includes menu data, order data, customer data, and queue number data obtained from direct observation at Bakso Mas Anto Marelan MSMEs.

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Research Methodology

The research methodology used in designing this website is the **Waterfall** method. The Waterfall method is a software development model that is carried out in stages and sequentially, where each stage must be completed before moving on to the next stage. The stages of the Waterfall method in this study consist of needs analysis, design, implementation, testing, and results.

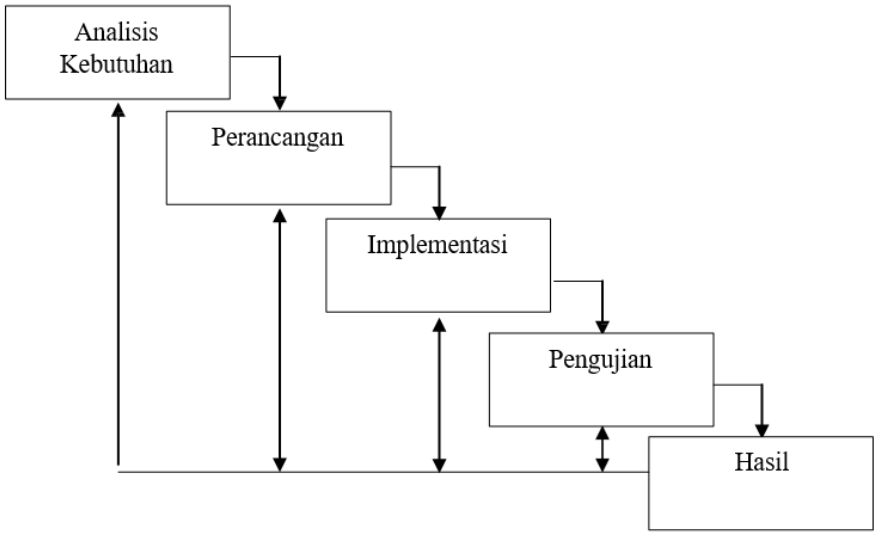

Figure 1. Diagram *Waterfall*

Description:

1. Needs Analysis

At this stage, information was collected related to the needs of the website through observation and interviews with the owner of Bakso Mas MSMEs, Anto Marelan. The needs analysis aims to find out the problems that occur in the order recording process and queue management that are still carried out manually. The result of this stage is a list of functional and non-functional needs of the website, such as order data management, automatic queue numbering, and the display of order status information.

2. Planning

The design stage is carried out based on the results of needs analysis. In this stage, a website workflow design, database structure, and user interface display design are made. The design aims to describe how the website works, from the customer placing an order to the order being processed according to the automatically generated queue number.

3. Implementation

The implementation stage is the process of implementing the design into the form of a website. At this stage, program code is written using web-based programming languages, such as HTML, CSS, PHP, and JavaScript, as well as the use of MySQL as a database. The implementation is carried out in accordance with the design that has been made at the previous stage.

4. Testing

Testing is carried out to ensure that all website features run according to the needs that have been determined. The test is carried out using the black box testing method, which is testing website functions such as order management, automatic queue number system, and display information to users. If an error is found, then repairs are made so that the website can run properly.

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5. Results

The final stage of the Waterfall method is to produce an order management website and an automatic queue number system that can be used by Bakso Mas Anto Marelan MSMEs. This website is expected to be able to help speed up the service process, reduce order recording errors, and increase efficiency and regularity in serving customers.

RESULTS AND DISCUSSION

The results and discussion of the Design of the Order Management Website and Automatic Queue Number System to Improve Service Efficiency in MSMEs (Case Study: Bakso Mas Anto Marelan) are as follows:

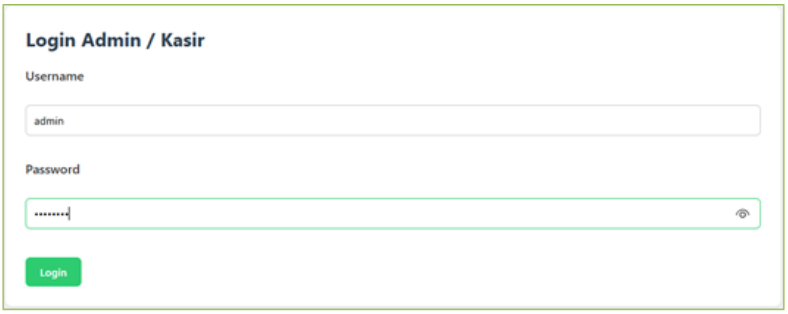

Figure 2. Login Admin

Figure 2 shows the admin login page view. This page serves as an initial security mechanism to restrict program access only to users who have administrator rights.

Results obtained:

1. The program successfully validated the username and password.
2. Admins can't access other pages without a login process.

The security of menu, queue, and report management data can be well maintained.

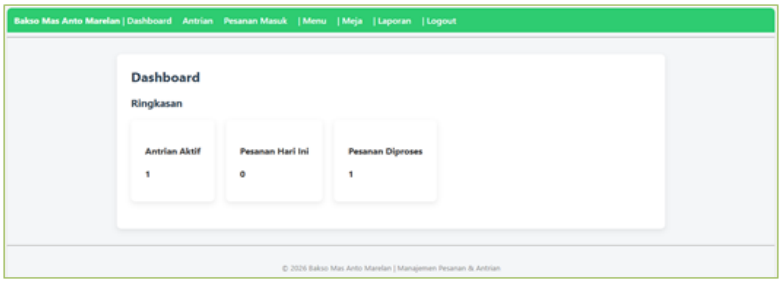

Figure 3. Dashboard Admin

Figure 3 shows the admin dashboard as the main page after successful login. The results obtained are that the Admin can see a summary of data such as the number of orders, the number of queues, menus, and tables. The navigation menu makes it easy for admins to move to other management pages. If the admin clicks Queue then the program will display as shown in Figure 4.

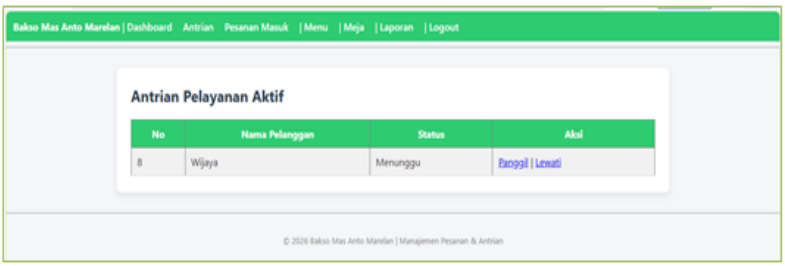

Figure 4. Manage Queues

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Figure 4 shows the queue management page by admin. The result obtained is that the admin can call, and skip the queue by clicking the available buttons. If the admin clicks Menu then the program will display as shown in Figure 5.

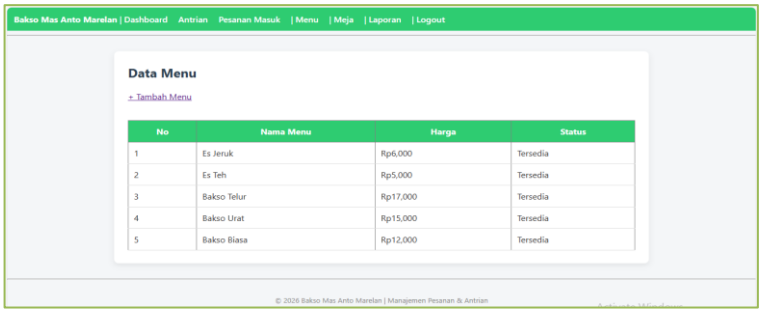

Figure 5. Manage Menu

Figure 5 shows the food and beverage menu management page. The result obtained is that the admin can add, change, and delete the menu. Menu changes are instantly synchronized with the customer's booking page. If admin clicks Desk then the program will display as shown in Figure 6.

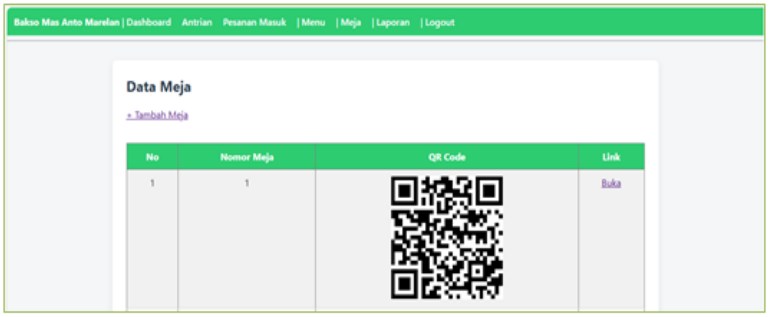

Figure 6. Manage Desk

Figure 6 shows the table management page. The result obtained is that the admin can add a table so that it also displays the barcode according to the available link automatically. If the admin clicks on Reports then the program will display it as shown in Figure 7.

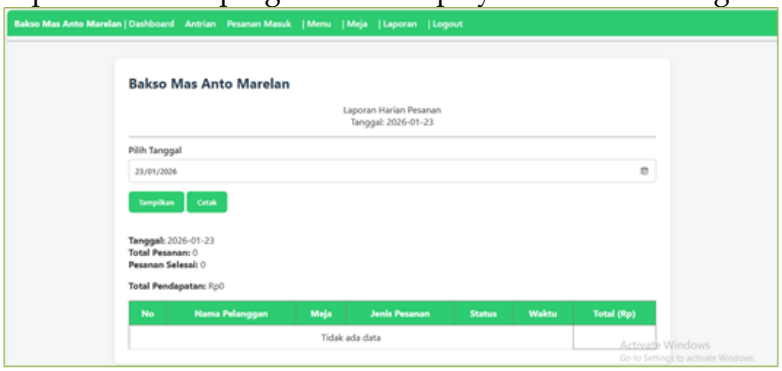

Figure 7. Reports

Figure 7 shows the transaction and order report page. The result obtained is that the program can display the report by selecting the date as a filter then displaying the data according to the date and click print.

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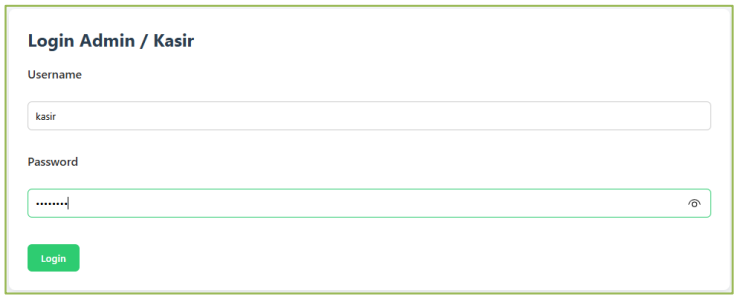

Figure 8. Cashier Login

Figure 8 shows the cashier login page. The result obtained is that the Cashier can only access features related to transactions. Access rights are distinguished from admins.

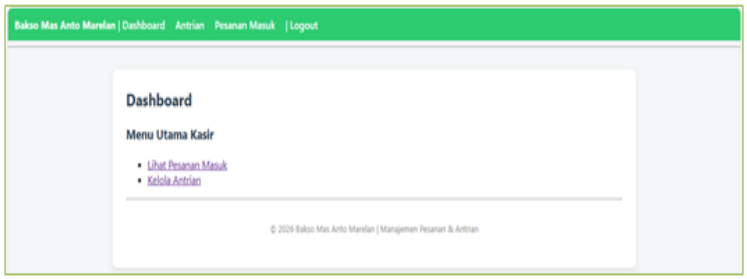

Figure 9. Cashier Dashboard

Figure 9 shows the cashier dashboard after login. The results obtained are that the cashier can see incoming orders and queue status. The transaction process becomes faster and more structured. If the admin clicks Queue then the program will display as shown in Figure 10.

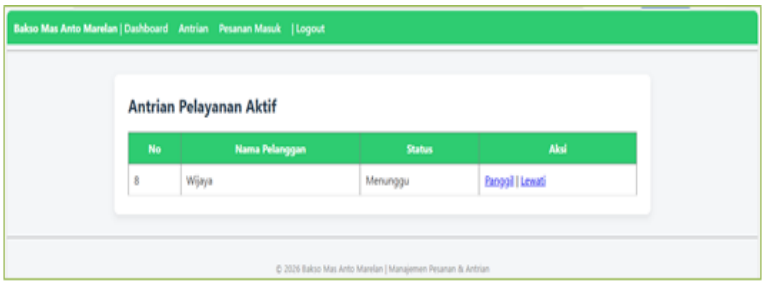

Figure 10. Manage Queues

Figure 10 shows the queue management feature by the cashier. The result obtained is that the cashier can call the queue in order and the queue status can be updated directly. The cashier can also skip the queue if the order has not been completed or the customer has not arrived. If the admin clicks Incoming Orders then the program will display as shown in Figure 11.

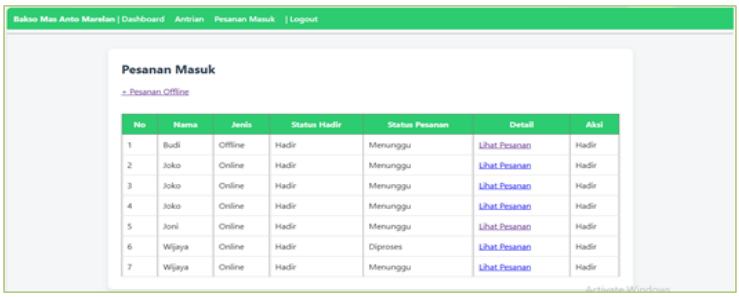

Figure 11. Incoming Orders

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Figure 11 shows the list of orders that came into the program. The results obtained are that orders are automatically recorded from customers and the status of orders can be monitored directly. If the admin clicks + Offline Orders then the program will display as shown in Figure 12.

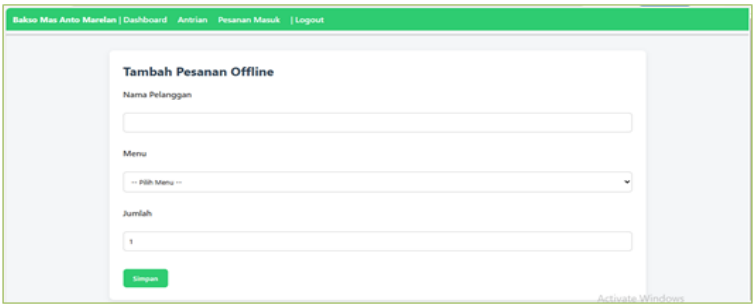

Figure 12. Offline Orders

Figure 12 shows the offline order feature. The results obtained are that the Cashier can still record customer orders that come directly and order data remains integrated with the program.

Customers initially access the customer's page to order a menu and register a name thus forming a queue record. The customer initially selects several menus to Add to Cart then fills in the name and clicks Save Order. The results can be seen in Figure 13.

Figure 13. Customer Booking

Figure 13 shows the order page by the customer. The result obtained is that customers can choose the menu independently and the program automatically records orders and queue numbers. If the customer clicks fill in the name and clicks Check Status then it appears like Figure 14.

Figure 14. Customer Orders

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Figure 14 shows the customer's order list. The result obtained is that the Customer can see the order details so that the transparency of the order increases.
If the customer chooses to sit at the table, then the customer can add an order on the condition that they must have registered online first and then access the barcode at the table (e.g. Table 1) so that a page like Figure 15 appears.

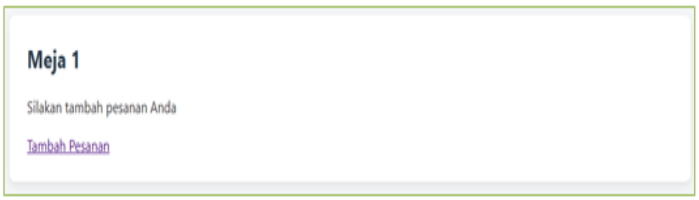

Figure 15. Customer Desk

Figure 15 shows the customer's desk information. The result obtained is that customers can add orders by clicking add order so that it appears like Figure 16.

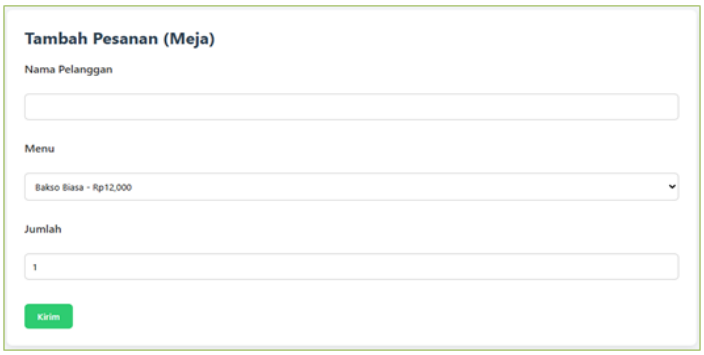

Figure 16. Add Order

Figure 16 shows the add order form. The result obtained is that customers can add orders by filling in the customer's name, menu, quantity, and click Send.

TEST RESULTS

Table 1. Functional Test Results

Yes	Features that Tested	Testing Scenarios	Results Expected	Results Testing
1	Login Admin	Admin enters username and password The Truth	The system successfully logged into the dashboard admin	Successful
2	Dashboard Admin	Admin opens the dashboard	Displays a summary of order count, queue count, menu, and Table	Successful
3	Manage Queues (Admin)	Admin click the call button Queue	Queue number changes to be summoned	Successful
4	Manage Menu	Admins can change menu data	Updated menu data	Successful

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5	Manage Desk	Admins can add a table	The system displays a new table and an automatic barcode	Successful
6	Reports	Admin selects the date filter and clicks print	The program can View sales reports	Successful
7	Cashier Login	Cashier logins with account Cashier	Cashier can access Transaction Features	Successful
8	Cashier Dashboard	The cashier accesses the navigation menu from the dashboard	Can view orders Login and Status Queue	Successful
9	Manage Queues	Admin accesses the page Queue	Can call A Tribute to the Legend	Successful
10	Incoming Orders	The customer places an order	Automatic recorded bookmaker	Successful
11	Offline Orders	Cashier adds orders Manual	The cashier can still Record orders	Successful
12	Customer Booking	Showing the Bookings page by the customer	Customers can Choosing a menu independently	Successful
14	Booking Customers	Customer order list	View order details	
14	Customer Desk	View customer order list	Customers can Perform Add Order	Successful
15	Add Order	Add order form	Customers can add Orders	Successful

CONCLUSION

Based on the results of the design and testing of the order management website and automatic queue number system at Bakso Mas Anto Marelan MSMEs, it can be concluded that the website designed is able to help the order recording process and queue management more regularly and efficiently. This website makes it easier for managers to manage order data, monitor order status, and automatically manage customer queue numbers without having to make written records. The implementation of an automatic queue number system can reduce queue chaos, speed up the service process, and increase regularity in serving customers. In addition, the use of the website as an order management medium also helps reduce recording errors and makes it easier to monitor the service process directly. Thus, the website is designed to improve service efficiency and have a positive impact on the quality of service for Bakso Mas Anto Marelan MSMEs.

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