



Volume XI Issue 3 Year 2026 | Page 1112-1122 | ISSN: 2527-9866

Received: 19-06-2026 | Revised: 15-07-2026 | Accepted: 10-08-2026

Web-Based Customer Loyalty Point System Using QR Code with Whatsapp Notification and Reward Management at Bismole Elektrik Store

Qatrhunada Abiyu Akhdan¹, Aditya Akbar Riadi², Ahmad Abdul Chamid³

^{1,2,3}Department of Informatics Engineering, Faculty of Engineering, Universitas Muria Kudus

email: 202251109@std.umk.ac.id¹, aditya.akbar@umk.ac.id², abdul.chamid@umk.ac.id³

*Correspondence: 202251109@std.umk.ac.id

Abstract: The development of information technology encourages retail business operators to implement digital systems to improve service quality and operational efficiency. At Bismole Elektrik Store, the processes of recording customers, purchase transactions, and calculating loyalty points were previously done manually, leading to data recording errors and slowing down the service process. Based on the observation of 120 customer transaction data and interviews with 2 store owners and cashiers, several issues were found, such as difficulties in searching for customer data and discrepancies in point calculations. This research aims to develop a web-based customer loyalty point system using QR Code as a digital customer identity integrated with reward management, sales reports, and real-time WhatsApp notifications. The system development uses the Waterfall method, which consists of the stages of requirements analysis, design, implementation, testing, and maintenance. The system is developed using the programming languages PHP, HTML, CSS, JavaScript, and the MySQL database. The system evaluation was conducted using the Black Box Testing method with 9 testing scenarios and User Acceptance Testing involving 5 users consisting of the store owner, cashier, and customers. The results of the Black Box Testing showed that all system features operated with a success rate of 100%, while the User Acceptance Testing results indicated a user satisfaction level of 92%, demonstrating that the system is easy to use and capable of supporting store operational activities. The research results show that the implementation of QR Code can accelerate the customer identification process, automate point calculations, manage the reward redemption process, and provide transaction information thru WhatsApp notifications. Thus, the developed system can enhance the efficiency and accuracy of managing the customer loyalty program at Toko Bismole Elektrik.

Keywords: Loyalty Point, QR Code, Web System, Customer Relationship, Waterfall Method.

1. Introduction

The rapid development of information technology has driven various business sectors [1] to undergo digital transformation to improve operational efficiency and service quality to customers. In the retail sector, the use of information technology not only functions to accelerate business processes but also helps enhance the accuracy of customer data management, transactions, and data-driven decision-making. The high level of business competition requires entrepreneurs to provide fast, accurate, and customer-oriented services.

One of the strategies widely implemented to retain customers is the loyalty point program. This program rewards customers with points each time they make a transaction, which can then be exchanged for various other prizes [2]. Loyalty programs have proven to be able to increase customer engagement, encourage repeat purchases, and strengthen long-term relationships between customers and the company. However, the success of loyalty programs is greatly influenced by the company's ability to manage customer data, transactions, and point calculations accurately and consistently.

Based on the observation conducted at Bismole Elektrik Store during January 2026 on 120 customer transaction data, it was found that the entire process of customer recording, purchase transactions, and loyalty point management is still done manually using notes and searching for customer phone numbers. This condition causes various operational challenges, such as the lengthy process of customer identification, potential errors in point recording, difficulties in tracing transaction history, and limitations in conveying information related to points and rewards to customers. The results of interviews with the store owner and one cashier also showed that the process of searching for customer data can take 1–3 minutes for each transaction, especially as the number of registered customers continues to increase.

One of the technologies that can be used to address this issue is the Quick Response Code (QR Code). QR Code is capable of storing information in the form of a two-dimensional code that can be scanned using a digital device's camera, allowing for a faster and more accurate identification process [3]. The application of QR Code in various information systems has proven to accelerate the user identification process, reduce data input errors, and improve service efficiency. Therefore, the use of QR Codes as digital customer identities is deemed appropriate to support the implementation of loyalty point programs in retail businesses.

Previous research has extensively discussed the implementation of QR Codes and customer loyalty programs. The research by Rusito and Putri implemented QR Code in a web-based restaurant ordering system [3]. Suryawan et al. applied QR Code and barcode in a digital payment system [4]. Bilqis et al. developed an employee attendance system based on QR Code [5]. Meanwhile, the research by Kamal and Artanti, as well as Sari, focuses on the impact of loyalty programs on customer satisfaction and loyalty [6], [7]. Nevertheless, most of these studies still separate the functions of digital identification and customer loyalty management, thus failing to provide an integrated system capable of managing customers, transactions, point accumulation, reward redemption, and customer communication automatically within a single platform. Furthermore, previous research generally focused only on technology implementation or customer loyalty analysis without evaluating how the integration of QR Code, reward management, and automatic notifications can support the operational efficiency of retail businesses. Thus, there is still a research gap in the unavailability of a web-based loyalty point system that integrates customer identification using QR Code, automatic point calculation, reward management, transaction reporting, and real-time WhatsApp notifications into a centralized system.

Based on the research gap, this study aims to design and build a Web-Based Customer Loyalty Point System using QR Code with WhatsApp Notification and Reward Management features at Bismole Elektrik Store. The developed system integrates QR Code as a digital identity for customers, an automatic point calculation mechanism, reward management, sales reports, and real-time WhatsApp notifications. The main contribution of this research lies in the integration of these various components into a single platform capable of supporting the management of customer loyalty programs more effectively, efficiently, and systematically in small and medium-sized retail business environments.

2. Literature Review

The development of QR Code-based systems and loyalty programs has been widely implemented in various business sectors and digital services. Research conducted by [3] on a web-based restaurant ordering system, [4] on a payment system using QR Code, and [5] on an employee attendance system shows that QR Code technology can increase the speed of user identification processes, minimize data input errors, and improve operational efficiency. On the other hand, research on loyalty programs conducted by [6] and [7] emphasizes that customer loyalty programs have a positive impact on customer satisfaction and are capable of increasing loyalty and repeat purchases. However, to conduct a critical synthesis of the research, it is

necessary to identify the limitations of its functionality to find the research gap [8]. The comparison of features, methods, and weaknesses of these key studies is summarized in Table 1.

Table 1. Comparison Of Previous Studies and Research Innovation

Research	Main Features	Development Method	System Evaluation	Research Limitations	Contribution of This Research
Rusito & Putri (2024)	QR Code-based restaurant ordering system	Development of web-based systems	Functional system testing	QR Code is only used for ordering and does not yet support customer identity, loyalty points, or customer engagement.	QR Code is used as a digital identity for customers that is integrated with transactions and reward management.
Suryawan dkk. (2021)	QR Code and Barcode payment system	Development of Android applications	Validation of transaction processes and functional testing of payments	The system only focuses on payments and does not yet support customer management, reward programs, or the development of loyalty services.	Providing an integrated system for customer management, transaction recording, and automatic point calculation.
Bilqis dkk. (2025)	QR Code-based employee attendance system	Development of web-based systems	Testing the accuracy of attendance data	QR Code is only used for employee authentication and does not yet support customer transaction activities.	Implementing QR Code as a customer identity to support transaction processes and point management.
Kamal & Artanti (2024)	Analysis of customer loyalty programs	Quantitative Research Method	Analysis of customer satisfaction and loyalty	Not producing a digital system to manage the loyalty program automatically.	Developing a web-based loyalty point system with an automatic point calculation and reward redemption mechanism.
Sari (2022)	Customer loyalty and CRM	Descriptive Research Method	Analysis of customer behavior and loyalty	Has not yet provided a digital system and automated communication with customers.	Adding real-time WhatsApp notification integration to enhance customer interaction and service.

Based on the comparison of previous research, the application of QR Code technology has proven to enhance user identification speed and operational process efficiency. However, most research still focuses on specific functions and has not yet provided a system capable of integrating customer management, transactions, loyalty points, reward management, and real-time customer communication into a single platform. Additionally, previous research has been limited to functional testing, so aspects such as system usability, user acceptance, data security, and the system's ability to scale according to the increasing number of users and transactions have not been extensively discussed.

Based on the research gap, this study develops a Web-Based Customer Loyalty Point System with QR Code Integration, WhatsApp Notifications, and Reward Management at Bismole Elektrik Store. The developed system not only integrates the processes of customer identification, transactions, automatic point calculation, reward redemption, and real-time information delivery via WhatsApp, but it is also evaluated using Black Box Testing and User Acceptance Testing (UAT) methods to ensure the system meets user needs, is easy to use, and has a good acceptance rate.

3.Methods

A. Research Data and Location

This research was conducted at Toko Bismole Elektrik located in Kembang Village, Jekulo District, Kudus Regency. The data required for this research were obtained directly from Toko Bismole Elektrik as the primary source. The data collection methods used in this research are as follows [9]: 1) Observation, conducted to observe the process of customer management, transactions, and the provision of loyalty points which are still done manually. The observation was carried out during the period of January 2026 by analyzing 120 customer transaction data. The data obtained includes quantitative data such as the number of customers, transaction dates, product types, purchase amounts, transaction values, and gift redemption history, as well as qualitative data such as service flow and obstacles faced in the customer recording and point management processes. 2) Interviews were conducted semi-structured with two informants, namely the store owner and cashier, using an instrument in the form of a questionnaire regarding system needs, loyalty point management mechanisms, gift redemption processes, the use of QR Codes as digital customer identities, and obstacles in the current system. The interview results yielded qualitative data on user needs and expectations for the system, as well as quantitative data on point allocation rules, available gift quantities, and customer transactions. 3) Literature review was conducted by examining journals, books, and previous research related to loyalty point systems, QR Code technology, web-based systems, the Waterfall method, and system testing as the theoretical foundation and reference in the system development process.

B. Sysytem Development Method

The system development in this research uses the waterfall model. This model applies a systematic and sequential approach. Each stage must be completed first before proceeding to the next stage [10]. The application of the Waterfall method in this research was chosen because it provides structured steps at each stage of application development, from requirements analysis to system maintenance [11]. The stages of the waterfall model can be seen in Figure 1.

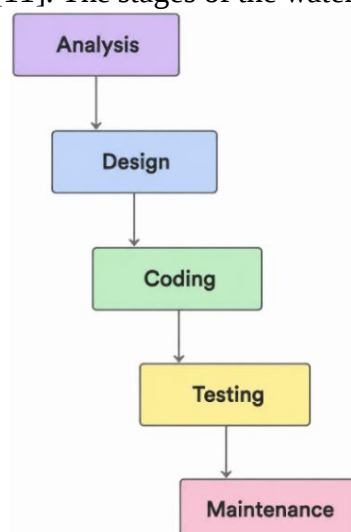


Figure 1. Waterfall Method

1. Analysis

The analysis stage is conducted to identify the functional and non-functional requirements of the system based on observations, interviews, and literature studies. The functional requirements of the system include customer data management, QR Code scanning, loyalty point transactions, reward redemption, gift catalog management, transaction reports, and WhatsApp notifications. The system implements a rule of earning 1 point for every transaction of at least Rp.10,000, points can be accumulated without an expiration period as long as the customer's account is active, and reward redemption is based on the number of points determined by the store. Non-functional requirements include data security, usability, access speed, and system compatibility across various devices and browsers.

2. Design

The design phase aims to translate system requirements into a design form before the system is implemented [12]. The design phase includes the creation of system architecture, database design, user interface design, as well as the creation of diagrams such as use case diagrams. This phase aims to provide a comprehensive overview of the processes and relationships between system components before implementation.

3. Coding

The implementation is carried out thru coding, where developers convert the system design into code that can be executed by a computer [13]. The system is developed using PHP as the main programming language, MySQL as the database, and HTML, CSS, and JavaScript to build the user interface. At this stage, various features are implemented such as login, adding customers, generating QR Codes, point transactions, claiming rewards, transaction history, sales reports, and WhatsApp notification integration for customers.

4. Testing

The testing phase is conducted to ensure that all system features operate according to user needs. Testing was conducted using the Black Box Testing method with test scenarios on the login feature, adding customers, point transactions, claiming rewards, customer data, gift catalog, transaction history, point redemption history, and sales reports. Additionally, User Acceptance Testing (UAT) was conducted involving (store owners, cashiers, and customers) to evaluate aspects of usability, feature alignment with operational needs, and user acceptance of the system. The test results are used as a basis to ensure that the system meets user needs in terms of both functionality and usability.

5. Maintenance

The maintenance phase is carried out after the system has been fully developed and is ready to be used at Toko Bismole Elektrik. At the maintenance stage, system monitoring is conducted to identify and fix bugs, optimize performance, add new features based on user needs, enhance security with the latest patches, and document changes to facilitate future system management [14]. With regular maintenance, the system is expected to continuously support customer management and loyalty point programs effectively, efficiently, and sustainably.

4. Results and Discussion

Functional Requirements

Functional requirements are needs that contain the functions that can be performed and the information produced by the system, including how the system should react to certain inputs and how the system behaves in specific situations. The functional requirements for this system are:

Table 2. Functional Requirements of the Bismole Elektrik Loyalty Point System

No	Actor	Functional Requirements
1.	Admin,Cashier	Logging in and managing customer data and customer QR Codes
2.	Admin,Cashier	Conducting transactions, adding points, and redeeming rewards automatically
3.	Admin,Cashier	Viewing transaction history, customer point redemption history, and the gift catalog
4.	Admin	Managing sales reports
5.	System	Sending WhatsApp notifications regarding customer registration, point additions, and gift redemptions

System Design

Use Case Diagram

The Use Case Diagram in the Bismole Elektrik Loyalty Point system is used to illustrate the interaction between actors and the developed system [15]. Additionally, the use case diagram is a diagram that shows the user's role and how that role is when using the system [16]. In this

diagram, there are two main actors, namely the admin and the cashier. The Use Case Diagram for the Customer Loyalty Point System Using QR Code at Bismole Elektrik Store can be seen in Figure 2.

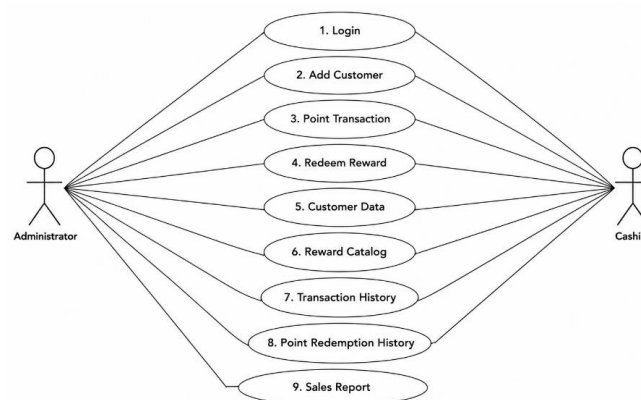


Figure 2. Use Case Diagram of Bismole Elektrik Loyalty Point System

User Interface

This section discusses the User Interface or the user interface of the Customer Loyalty Point System Using QR Code at Bismole Elektrik Store, which was created as a solution to facilitate the management of customer data, point transactions, gift redemptions, and sales report generation. The system interface is designed to be user-friendly for admins and cashiers in carrying out operational processes effectively and efficiently.

1. Login Page

The login page is the initial page used to access the Customer Loyalty Point System. On this page, there are fields for username and password that must be filled in by the user to perform the authentication process. The login page is used by admins and cashiers according to their respective access rights. After the login data is successfully verified by the system, users will be directed to the dashboard page to access the available features according to their respective roles.

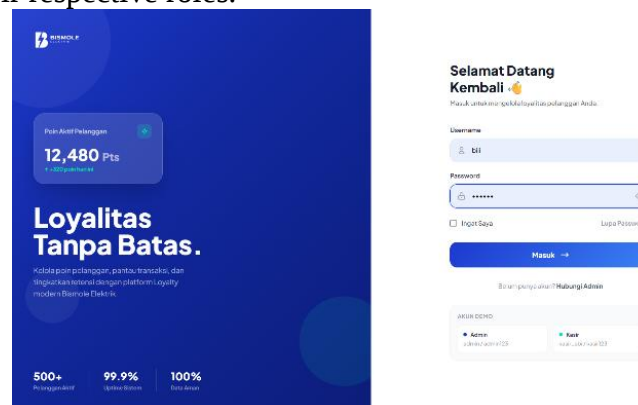


Figure 3. Login Page

2. Dashboard Page

The dashboard page is the main page displayed after the user successfully logs into the system. This page presents concise information about system activities, such as the number of registered customers, the number of available rewards, total transactions, and other important information. The dashboard helps users monitor the system's condition quickly and efficiently.

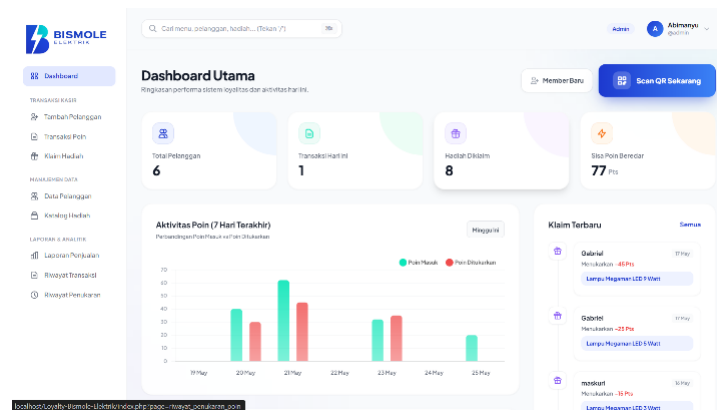


Figure 4. Dashboard page

3. Add Customer Page

The add customer page is used to register new customers into the system. Admin or cashier can enter customer data such as name and phone number. After the data is successfully saved, the system will automatically send a notification via WhatsApp to the registered customer number. The notification contains a QR Code that serves as the customer's digital identity. This QR Code is used for the scanning process during transactions or gift redemptions, allowing for faster and more accurate customer identification.

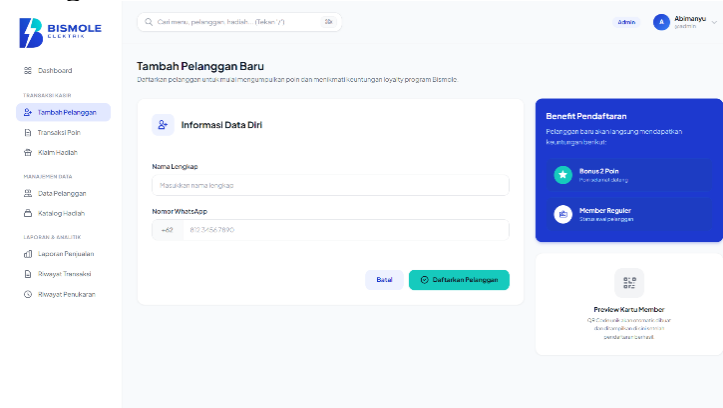


Figure 5. Add Customer Page



Figure 6. Automatic qr code creation message

4. Point Transaction Page

The point transaction page is used to record customer transactions and automatically add points based on the purchase amount. The transaction process is carried out by scanning the customer's QR Code, allowing the system to automatically display customer data. After the transaction is successfully processed, the customer's points will increase according to the predetermined rules, and the system will send a WhatsApp notification as information on the number of points earned.

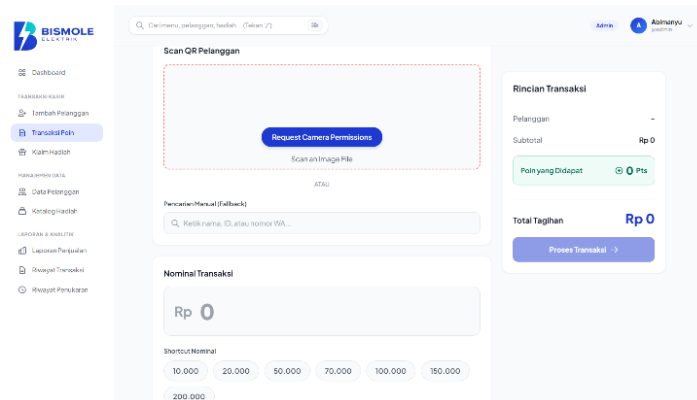


Figure 7. Point Transaction Page



Figure 8. total exchange point notification

5. Prize Claim Page

The reward claim page is used to exchange customer points for the prizes available in the catalog. The system will check the number of customer points before the claim process is carried out. If the number of points is sufficient, the system will automatically deduct the customer's points and record the gift redemption transaction in the system's history. Customers will also receive a WhatsApp notification regarding the successful completion of the reward redemption process.

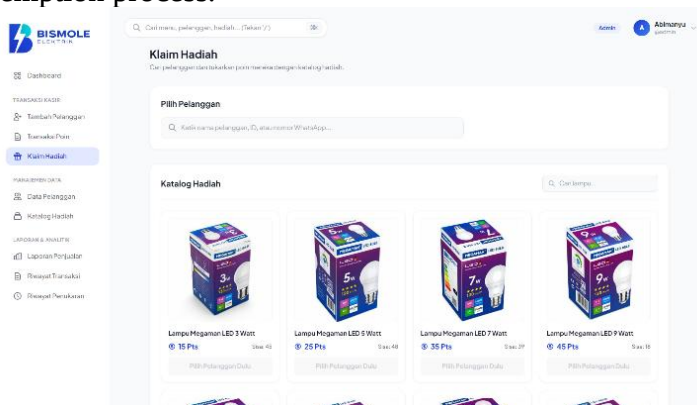


Figure 9. Prize Claim Page

6. Sales Report Page

The sales report page is used to display transaction data that has occurred within a certain period. The information displayed includes the number of transactions, total sales, and the activity of awarding points to customers. This page helps the admin in monitoring, evaluating, and making decisions based on the sales data stored in the system.

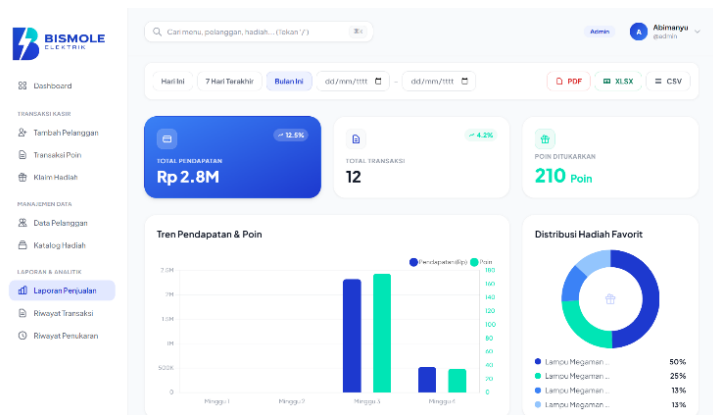


Figure 10. Sales Report Page

7. Transaction History Page

The transaction history page is used to display all customer transaction activities that have been recorded in the system. The information displayed includes customer identity, transaction date, purchase amount, number of points earned, and transaction status. This feature makes it easier for admins and cashiers to track transaction data if needed.

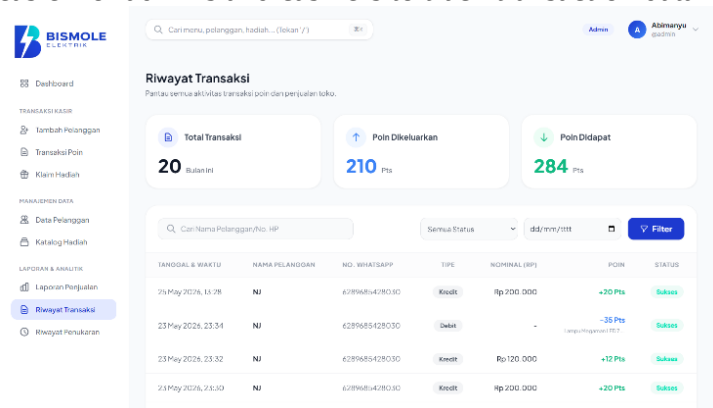


Figure 11. Transaction History Page

Based on the results of the system implementation that has been carried out, the developed customer Loyalty Point system is able to provide improvements compared to the manual process previously applied at Toko Bismole Elektrik. The use of QR Code as a digital identity for customers helps speed up the customer identification process and reduces recording errors that can occur in the manual process. In addition, the processes of point calculation, transaction recording, and transaction history management are carried out automatically, thereby helping admins and cashiers improve the efficiency of customer data management.

The integration of WhatsApp notifications allows customers to receive information related to registration, point additions, and gift redemptions automatically, thereby enhancing communication between customers and the store. The sales report and transaction history features also provide ease in the monitoring and evaluation process of the loyalty point program. Thus, the developed system is capable of offering a more effective, accurate, and structured customer loyalty management compared to manual recording methods.

System Testing

1. Black Box Testing

System testing is conducted using the Black Box Testing method to ensure that all features function according to requirements [17]. This testing also focuses on the conformity of the system's output to input scenarios without examining the internal code structure [18]. The results of the Black Box Testing can be seen in Table 3.

Table 3. Black Box Testing Results

No	Tested Menu	Test Steps	Expected Results	Status
1.	Login	User login enters username and password	Login successful and users will be directed to the dashboard corresponding to their role (admin and cashier).	Successful
2.	Add Customers	Admin/cashier fills in the full name and WhatsApp number of the new customer, then presses the "Register Customer" button.	Customer data has been successfully saved to the database, the customer receives initial bonus points, and the system displays the membership card along with the customer's QR Code.	Successful
3.	Point Transaction	Admin/cashier scans the customer's QR code or performs a manual search, then enters the transaction amount and presses the "Process Transaction" button.	The system successfully displays customer data, automatically calculates points based on transaction amounts, stores transactions, and adds points to customer accounts.	Successful
4.	Claim Prizes	Admin/cashier searches for customers, selects gifts from the catalog, and then presses the claim gift button.	The system successfully verified the customer's points, deducted points according to the selected reward, stored the redemption history, and displayed a successful claim notification.	Successful
5.	Customer Data	Admin/cashier opens the customer data page and performs search, edit, or delete customer data.	The system successfully displayed the customer list, performed data searches, updated customer data, and deleted customer data according to the selected action.	Successful
6.	Gift Catalog	Admin/cashier adds, edits, or deletes gift data in the gift catalog.	The system successfully saved the changes to the gift data, displayed stock and reward point information, and automatically updated the gift catalog.	Successful
7.	Transaction History	Admin/cashier opens the transaction history page and performs a search and filter of transaction data.	The system successfully displayed the entire transaction history of customer points, performed data search and filtering, and displayed transaction details correctly.	Successful
8.	Point Exchange History	Admin/cashier opens the exchange history page and performs a search and filter of the gift exchange data.	The system successfully displayed the entire history of customer reward redemptions, performed data searches and filtering, and correctly displayed the details of point redemptions.	Successful
9.	Sales report	Admin selects the report period and exports the report data.	The system successfully displays a summary of the sales report, transaction and point graphs, and generates report files in PDF, XLSX, or CSV format.	Successful

2. User Acceptance Testing

UAT to evaluate the level of acceptance and ease of use of the system. The testing was conducted on 5 respondents consisting of store owners, cashiers, and customers using evaluation indicators for ease of use, feature suitability, benefits of using QR Code, and the effectiveness of WhatsApp notifications in supporting customer service. In the UAT (User Acceptance Testing), users were asked to try the system and answer questions in the form of a questionnaire on Google Forms [9].

Table 4. User Acceptance Testing (UAT) Questionnaire Assessment

No	QUESTION	ANSWER				
		Strongly Agree ×5	Agree ×4	Somewhat Disagree ×3	Disagree ×2	Strongly Disagree ×1
1.	Can the Loyalty Point system using QR Code be easily used and meet the needs of users?	4	1			
2.	Does the use of QR Code help speed up the process of customer identification and transactions more accurately?	4	1			
3.	Can the process of calculating loyalty points and redeeming rewards be done automatically and effectively?	3	2			
4.	Are the WhatsApp notifications regarding customer registration, point addition, and prize redemption sent as needed?	2	3			
5.	Do the transaction report feature, point history, and customer management help improve store management efficiency?	2	3			

The total UAT results are:

$$\frac{96\% + 96\% + 92\% + 88\% + 88\%}{5} = \frac{460}{5} = 92\%$$

So, the overall result of the UAT testing shows that the Customer Loyalty Point system using QR Code at Toko Bismole Elektrik has met user needs well. This is evidenced by user assessments of the developed system functions, such as ease of use, speed of customer identification using QR Code, automation of loyalty point calculations and reward redemptions, and the effectiveness of WhatsApp notifications in providing information to customers. The number of respondents in the UAT testing involved 5 respondents consisting of the store owner, cashier, and customers.

5. Conclusions

Based on the research results, a web-based Customer Loyalty Point System using QR Code has been successfully developed at Toko Bismole Elektrik, integrated with reward management features, sales reports, and real-time WhatsApp notifications. The results of the Black Box Testing on 9 test scenarios showed a success rate of 100%, while the User Acceptance Testing (UAT) results, which involved 5 respondents consisting of the store owner, cashier, and customers, achieved a satisfaction rate of 92%. These results indicate that the system is capable of supporting customer management, loyalty point transactions, and customer service in a more structured and user-friendly manner. Nevertheless, this research still has some limitations, such as the lack of system security testing, direct measurement of time efficiency, and evaluation of system usage in the long term. Therefore, future research can develop a mobile-based application, add customer behavior analysis features, and conduct more in-depth security and system performance testing.

References

- [1] A. A. Riadi, I. L. Putra, Dan T. S. Andre, "Implementasi Sistem Informasi Inventori Berbasis Digital Sebagai Teknologi Tepat Guna Umkm Kerudung Boundary Jepara," *Ikra-Ith Abdimas*, Vol. 10, No. 1, 2026, Doi: <https://doi.org/10.37817/Ikra-Ithabdimas.V10i1>.

- [2] G. Y. Abimanyu Dan H. E. Rosyadi, "Perancangan Ui/Ux Sistem Tiket Bus Berbasis Web Dengan Fitur Loyalty Program Menggunakan Metode User Centered Design," *Jati J. Mhs. Tek. Inform.*, Vol. 9, No. 5, 2025, Doi: <https://doi.org/10.36040/Jati.V9i5.15221>.
- [3] R. Rusito Dan Diyah Intan Mawarni Putri, "Implementasi Qr Code Untuk Sistem Informasi Pemesanan Menu Pada Restoran Omah Gedhe Pandean Kaliwungu Berbasis Web," *Logiclink*, Des 2024, Doi: <https://doi.org/10.28918/Logiclink.V1i2.9164>.
- [4] M. A. Suryawan, E. M. Hasiri, Dan K. Ode, "Implementasi Sistem Qr Code Dan Barcode Pada Sistem Pembayaran Di Toko Perbelanjaan Menggunakan Aplikasi Android," *J. Inform.*, Vol. 9, No. 2, Hlm. 1, Jan 2021, Doi: <https://doi.org/10.55340/Jiu.V9i2.231>.
- [5] Y. T. Bilqis, H. Herdianto, Dan H. Hendry, "Sistem Absensi Karyawan Berbasis Web Menggunakan Metode Qr Code Pada Kantor Desa Cinta Raja," *J. Minfo Polgan*, Vol. 14, No. 1, Hlm. 86–93, Mar 2025, Doi: <https://doi.org/10.33395/Jmp.V14i1.14625>.
- [6] N. R. Kamal Dan Y. Artanti, "Pengaruh Program Loyalitas, Persepsi Nilai, Dan Persepsi Kemudahan Penggunaan Terhadap Kepuasan Pelanggan Yang Berdampak Pada Loyalitas Pelanggan (Studi Pada Konsumen By.U)," *Edunomika*, Vol. 08, No. 01, 2024, Doi: <https://doi.org/10.29040/Jie.V8i1.12675>.
- [7] H. K. Sari, "Efektivitas Loyalty Program Dalam Customer Relationship Management Terhadap Kepuasan Dan Loyalitas Pelanggan," *J. Ilmu Komuniaksi*, Vol. 6, No. 2, 2022, Doi: <https://doi.org/10.24002/Jik.V6i2.202>.
- [8] N. M. Kenmahdy, A. Jazuli, Dan E. Wijayanti, "Implementation Of Web-Based Inventory System with Email Notifications for Stock Efficiency and Project Management At Cv Bonanza," Vol. 10, No. 3, 2025, DOI: <https://doi.org/10.35314/nggzee18>.
- [9] Z. N. Jannah, A. A. Riadi, Dan R. Meimaharani, "Analysis and Development of a School Platform with A User Experience Approach at Samirejo 3 Elementary School," *Inovtek Polbeng - Seri Inform.*, Vol. 11, No. 1, Hlm. 44–54, 2026, Doi: <https://doi.org/10.35314/Wnxj8m38>.
- [10] N. N. Sari, R. M. Maharani, Dan A. A. Chamid, "Perancangan Sistem Informasi E-Commerce Dan Manajemen Stok Berbasis Website Untuk Meningkatkan Efisiensi Transaksi Pada Toko Sembako (Studi Kasus Toko Rizky Sudimoro)," Vol. 10, No. 1, 2026, Doi: <https://doi.org/10.36040/Jati.V10i1.17103>.
- [11] R. D. Yuliyanto, Sri Sumarlinda, Dan Wiji Lestari, "Pengembangan Qr Code Inventaris Dengan Metode Waterfall Pada Lsp Asnakes Indonesia," *Jekin - J. Tek. Inform.*, Vol. 4, No. 3, Hlm. 638–649, Agu 2024, Doi: <https://doi.org/10.58794/Jekin.V4i3.884>.
- [12] R. Yolanda, R. M. Maharani, Dan A. A. Chamid, "Implementasi Sistem Penggajian Karyawan Berbasis Web Untuk Efisiensi Operasional Toko Inaya Kosmetik," *Jati J. Mhs. Tek. Inform.*, Vol. 10, No. 1, 2026, Doi: <https://doi.org/10.36040/Jati.V10i1.17166>.
- [13] U. S. Khoirunnisaa, A. A. Riadi, Dan E. Evanita, "Penerapan Metode Role-Based Access Control pada Aplikasi Cuti Online Di Yayasan Al-Achsaniiyyah Untuk Staf Berbasis Website," *Jipi J. Ilm. Penelit. Dan Pembelajaran Inform.*, Vol. 10, No. 4, 2025, Doi: <https://doi.org/10.29100/Jipi.V10i4.7084>.
- [14] F. K. Wafi, E. Wijayanti, Dan A. A. Chamid, "Perancangan Sistem Pemesanan Mandiri Berbasis Website Pada Caffé Mlatea Untuk Optimalisasi Layanan," *Jipi J. Ilm. Penelit. Dan Pembelajaran Inform.*, Vol. 10, No. 4, Hlm. 4216–4226, Des 2025, Doi: <https://doi.org/10.29100/Jipi.V10i4.7241>.
- [15] E. S. Nurainin, R. Meimaharani, Dan A. A. Chamid, "Sistem Informasi Pembayaran Berbasis Website Untuk Efisiensi Dan Transparansi Administrasi Kos Puri Delima Dersalam," *J. Sist. Inf. Tgd*, Vol. 5, No. 1, Hlm. 12–20, 2026, Doi: <https://doi.org/10.53513/Jursi.V5i1.12367>.
- [16] N. Hidayanti, E. Nuryani, R. Kania, Dan F. Y. Wijaya, "Rancang Bangun Sistem Informasi Manajemen Perpustakaan Menggunakan Qr Code Berbasis Website," *J. Sist. Inf. Dan Inform. Simika*, Vol. 6, No. 1, Hlm. 35–47, Feb 2023, Doi: <https://doi.org/10.47080/Simika.V6i1.2417>.
- [17] F. M. Daelami, R. Meimaharani, Dan A. A. Chamid, "Sistem Informasi Booking Layanan Pemasangan Lampu Variasi Berbasis Website Pada Bengkel Dvm Motor," *J. Sist. Inf. Tgd*, Vol. 5, No. 1, Hlm. 21–29, 2026, Doi: <https://doi.org/10.53513/Jursi.V5i1.12368>.
- [18] F. Saputra Dan E. I. H. Ujjianto, "Sistem Pengelolaan Inventori Real-Time Untuk Umkm Berbasis Flutter Dan Qr Code Menggunakan Metode R&D," *Jurikom J. Ris. Komput.*, Vol. 12, No. 6, Hlm. 908–915, 2025, Doi: <https://doi.org/10.30865/Jurikom.V12i6.9305>.