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# Design and Usability Evaluation of a Web-Based Car Service Monitoring System at FocusAuto

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**Abstract:** FocusAuto Repair Shop currently relies on manual WhatsApp updates for service status, resulting in delayed responses, inconsistent information, and limited transparency for customers. This condition reflects a broader challenge in information system adoption among Indonesian MSMEs. This study aims to design and implement a web-based car service monitoring system using the Rapid Application Development (RAD) method and evaluate its usability using the System Usability Scale (SUS). The system was developed through four RAD stages: Planning, Design, Construction, and Implementation, utilizing Laravel, Bootstrap, and MySQL. Key features include real-time status tracking, customer data management, and PDF invoice generation. System functionality was validated through Black-box testing involving 18 test scenarios for admin and customer modules. Usability was evaluated using the SUS questionnaire distributed to 10 FocusAuto customers. Results indicate that all 18 test scenarios passed successfully, confirming system reliability and functional compliance. The usability evaluation yielded an average SUS score of 85.25, categorizing the system as Excellent. These findings demonstrate that the developed system effectively replaces existing manual workflows, significantly improving service transparency and operational efficiency at FocusAuto. The study concludes that web-based monitoring systems enhance customer satisfaction in automotive MSMEs. Future work recommends cloud deployment and WhatsApp API integration to further maximize accessibility and automation.
**Keywords:** Web, Car Service Monitoring, RAD, SUS, Real-Time Tracking, FocusAuto

## 1. INTRODUCTION

The digital transformation of Micro, Small, and Medium Enterprises (MSMEs) has become a critical driver for economic growth and operational efficiency globally. International studies emphasize that structured service workflows and real-time transparency are essential standards for modern automotive repair providers to maintain customer trust [1]. However, adoption remains uneven; according to the Ministry of Communication and Informatics (KOMINFO), by 2024, only approximately 26% of MSMEs in Indonesia have adopted digital platforms, indicating a significant gap in technology adoption among small businesses [2]. This condition reflects a broader challenge in information system implementation, where many enterprises still rely on manual processes that hinder productivity and service transparency [3]. In the automotive repair sector, effective service management is essential for customer satisfaction. However, many workshops, including FocusAuto Repair Shop in Kalasey, North Sulawesi, continue to manage service status updates manually through messaging applications like WhatsApp. This manual

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approach often results in delayed responses, inconsistent information, and limited transparency for customers who must leave their vehicles for several days during body repair and repainting services.

Real-time tracking systems have been widely adopted in various service-based industries to enhance information delivery and customer experience [4], [5]. Several previous studies have explored similar solutions in different contexts. Jondya et al. developed a web-based car maintenance application using the Prototype method, focusing primarily on service history recording [6]. Cahyaningrum and Norhikmah implemented real-time tracking in a laundry information system, demonstrating that tracking features significantly improve customer satisfaction [7]. Similarly, Pambudi et al. designed a book order tracking system using the Prototyping method to improve transparency in the publishing industry [8]. While these studies validate the effectiveness of tracking systems, none specifically address real-time service monitoring for automotive body repair workshops or evaluate system usability using the System Usability Scale (SUS) in an MSME context.

To address these gaps, this study aims to design and evaluate a web-based car service monitoring system at FocusAuto Repair Shop using the Rapid Application Development (RAD) method. The RAD method is selected for its ability to support rapid system development through iterative prototyping and continuous user feedback, which is suitable for small-scale web applications [9]. The system enables customers to monitor their vehicle service status in real time, including service tracking, service history, and invoice information. The usability of the developed system is evaluated using the System Usability Scale (SUS) to measure how easily users can interact with the system, ensuring that the solution is not only functional but also user-friendly [10]. The system is constructed using the Laravel framework and Bootstrap for responsive interface design [11], [12]. The scope of this research is limited to FocusAuto's internal users, namely customers and workshop staff, and excludes payment gateway functionality. This research contributes to the limited literature on digital transformation in automotive MSMEs by providing empirical evidence of usability and operational efficiency improvements through a structured web-based monitoring solution.

# 2. RESEARCH METHODOLOGY

This study adopts an applied research design with a mixed-methods approach to develop and evaluate a web-based car service monitoring system. The qualitative approach is used to identify system requirements through interviews, observations, and literature studies, while the quantitative approach evaluates system usability using the System Usability Scale (SUS) questionnaire. The research was conducted at FocusAuto Repair Shop, Kalasey Satu, Minahasa, North Sulawesi, during the period August 2025 to January 2026. This timeframe aligns with standard design science research cycles for small-scale web applications [9].

## 2.1 Data Collection

The data used in this study consist of primary and secondary data obtained through several data collection techniques. Primary data were collected directly from FocusAuto Repair Shop through interviews, customer questionnaires, and field observations to understand the existing service process and identify system requirements. Secondary data were obtained through literature studies, including books, scientific journals, and previous research related to information systems, real-time tracking systems, and Rapid Application Development (RAD). The summary of the data collection methods used in this research is presented in Table 1.

**Table 1.** Data Collection Description

| No | Data Collection Method | Data Source | Purpose |
|---|---|---|---|
| 1 | Interview | FocusAuto Admin | To identify system requirements and understand the existing service workflow |

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| No | Data Collection Method | Data Source | Purpose |
|---|---|---|---|
| 2 | Questionnaire | FocusAuto Customers | To collect customer experiences and expectations regarding service monitoring |
| 3 | Observation | Service activities at FocusAuto | To analyze the current vehicle service process and information flow |
| 4 | Literature Study | Journals, Books, Previous Research | To support system design and research methodology |

Interviews were conducted with the FocusAuto administrator using semi-structured questions to identify operational issues and define system requirements. Customer questionnaires were distributed via Google Forms to gather information about how customers receive service updates and the features they expect from a monitoring system. Observation was performed by directly examining service activities at the FocusAuto workshop, including vehicle reception, diagnosis, repair, and completion processes. Meanwhile, literature studies were carried out by reviewing relevant academic sources related to information systems, real-time monitoring, and web-based system development [8].

### 2.2 System Development Method

This research applies the Rapid Application Development (RAD) method as shown in Figure 1, which consists of four stages: Planning, Design, Construction, and Implementation. RAD was chosen because it supports rapid system development through iterative prototyping and continuous user feedback, making it suitable for small-scale web applications [2]. The method allows system requirements to be refined during development while ensuring that the final system meets user needs.

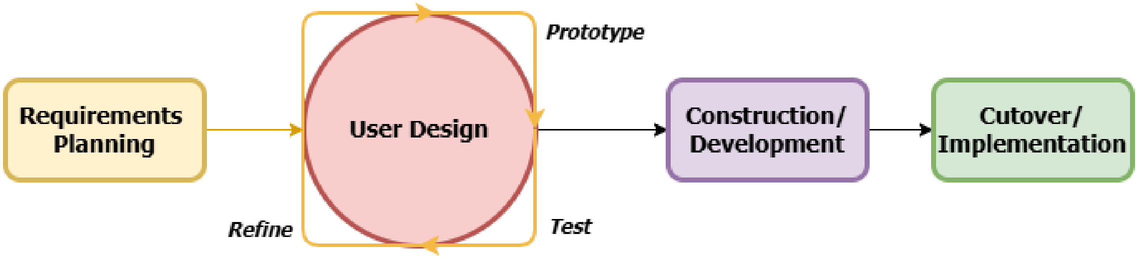


**Figure 1.** Rapid Application Development Method

**a) Planning**

Interviews, questionnaires, and observations were conducted at FocusAuto Repair Shop to identify system requirements and analyze the existing service process. The results defined functional requirements such as service status tracking, customer and vehicle data management, service history viewing, invoice generation, and user authentication. Service workflow modeling was guided by automotive repair process standards [13].

**b) Design**

The system design was modeled using Unified Modeling Language (UML) diagrams [10] including Use Case, Activity, and Class Diagrams. Interface layouts were refined through iterative prototyping to improve usability and ensure that the system workflow aligns with operational needs.

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**c) Construction**

The system was developed as a web-based application using Laravel, Bootstrap, MySQL, and XAMPP. The Laravel framework was selected for its robust security features and MVC architecture [11], while Bootstrap ensured responsive interface design across devices [12]. The main features include a six-stage service progress tracker, real-time status updates, invoice generation in PDF format, and administrative management for service data.

**d) Implementation**

The developed system was deployed in a local server environment and demonstrated to the FocusAuto administrator to verify system functionality before operational use. Ethical considerations were prioritized during implementation, ensuring data security through access control mechanisms and maintaining participant anonymity during evaluation [9].

### 2.3 Evaluation Methods

The evaluation stage was conducted to assess the functionality and usability of the developed web-based car service monitoring system. Two evaluation methods were used in this study: Black-box testing and System Usability Scale (SUS) evaluation. Black-box testing was performed to verify whether system functions operate according to the defined requirements [15], while the SUS questionnaire was used to measure user satisfaction and system usability. The evaluation methods used in this research are summarized in Table 2.

**Table 2.** Evaluation Method Description

| No | Evaluation Method | Participants | Purpose |
|---|---|---|---|
| **1** | Black-box Testing | Developer | To verify system functionality based on input and output validation |
| **2** | SUS (System Usability Scale) Questionnaire | 10 FocusAuto Customers | To evaluate system usability |

Black-box testing was conducted using 18 test scenarios, consisting of 11 scenarios for the admin module and 7 scenarios for the customer module, focusing on validating system inputs and outputs. The SUS questionnaire was distributed to 10 FocusAuto customers, consisting of 10 statements measured using a five-point Likert scale [3]. The SUS score was calculated by adjusting odd and even question scores and multiplying the total value by 2.5 to obtain the final usability score. To mitigate bias, qualitative findings from interviews were cross-verified with observational data, and the standardized SUS instrument minimized subjective interpretation during usability evaluation.

## 3. RESULT AND DISCUSSIONS

This section presents the implementation results of the web-based car service monitoring system at FocusAuto Repair Shop. The findings are organized according to the Rapid Application Development (RAD) stages: Planning, Design, Construction, and Evaluation.

### 3.1 Planning and Design Result

The planning stage identified key functional requirements, including real-time status tracking, customer data management, and invoice generation. Based on interviews and observations, the system requirements were categorized into functional and non-functional requirements, as presented in Table 3. The design phase translated these requirements into system models using Unified Modeling Language (UML) [11].

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**Table 3.** Functional and Non-Functional Requirements

| System Requirements | Requirement | Description |
|---|---|---|
| Functional Requirements | Service Status Update and Tracking | Allows admins to update service status and customers to monitor progress in real time |
| | Customer and Vehicle Data Management | Enables admins to manage customer and vehicle data |
| | Invoice Generation | Generates service invoices accessible to customers |
| | Service Photo Upload | Allows uploading vehicle condition photos during service. |
| | Service History Viewing | Allows customers to view previous service records. |
| | Service Time Estimation | Displays estimated service completion time. |
| Non-Functional Requirements | System Security | Protects data through access control mechanisms |
| | Usability | Provides simple interface and mobile-friendly |
| | Performance | Ensure timely service status updates |
| | Compatibility | Supports common devices |

Figure 2 illustrates the Use Case Diagram, defining interactions between Admin and Customer actors. The Admin manages service progress and data, while customers monitor status and access invoices.

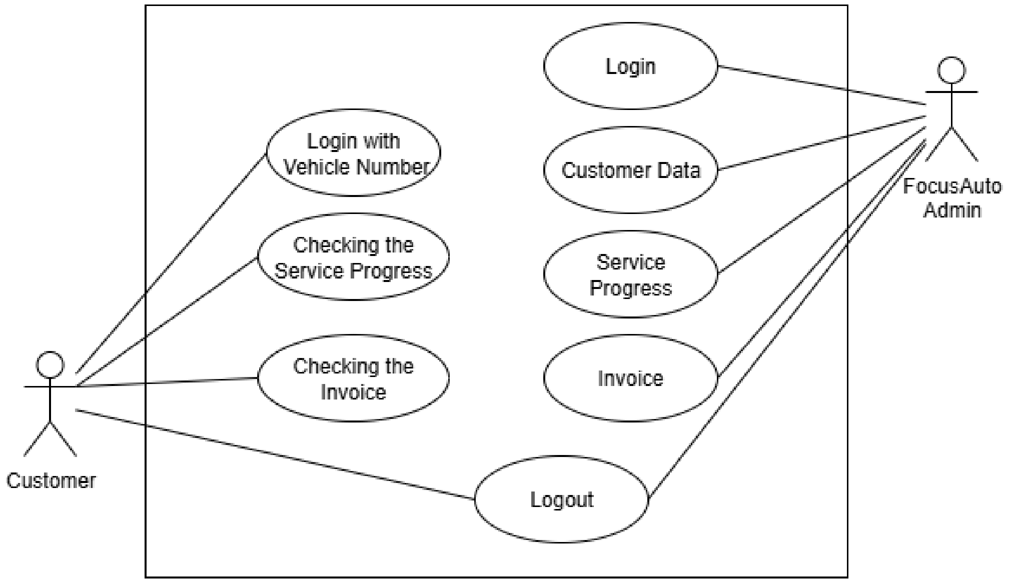


**Figure 2.** Use Case Diagram

The Activity Diagram describes the workflow of system interactions. The admin (Figure 3) performs activities such as logging in, managing data, and updating service progress, while customers (Figure 4) access the system to view service tracking information, invoices, and service history.

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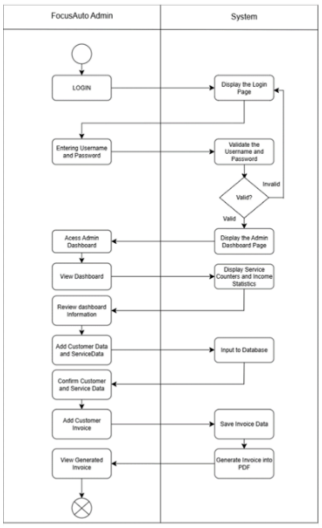


**Figure 3..** Activity Diagram Admin

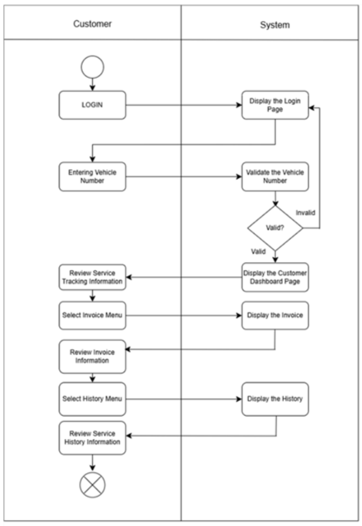


**Figure 4.** Activity Diagram Customer

The interface design was developed through an iterative prototyping process. The first iteration produced initial wireframes for the admin login page, admin dashboard, customer login page, and service tracking interface. Visual verification showed that several components required minor layout adjustments, as shown on Figure 5

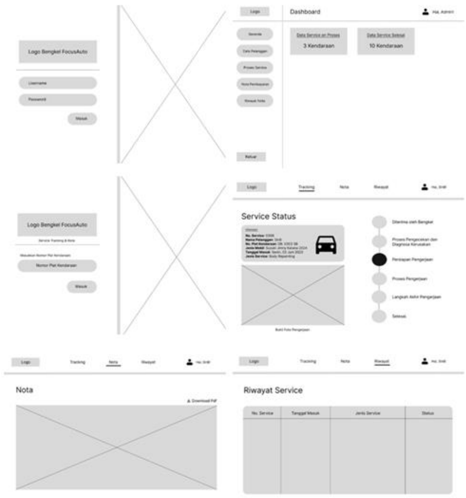


**Figure 5.** Activity Diagram Admin

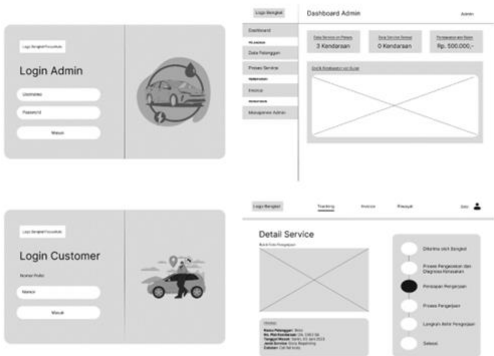


**Figure 6.** Activity Diagram Customer

In the second iteration (Figure 6), the interface was refined to improve layout consistency and visual clarity. After evaluation, all components were validated and ready for system implementation

## 3.2 Construction Result

The system was constructed using the Laravel framework and Bootstrap for responsive interface design. Key interfaces include the Admin Dashboard and Customer Tracking Page. Figure 3 shows the Admin Service Progress Page, where administrators can update the six-stage service workflow. Figure 4 displays the Customer Service Tracking Page, which provides real-time visibility into repair status and notifies users of updates via popup alerts.

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**a) Admin Service Progress Page**

The Admin Service Progress page allows administrators to manage and update vehicle service status. The interface displays a six-stage service progress indicator, enabling admins to update the repair status while providing a clear visual representation of the service process.

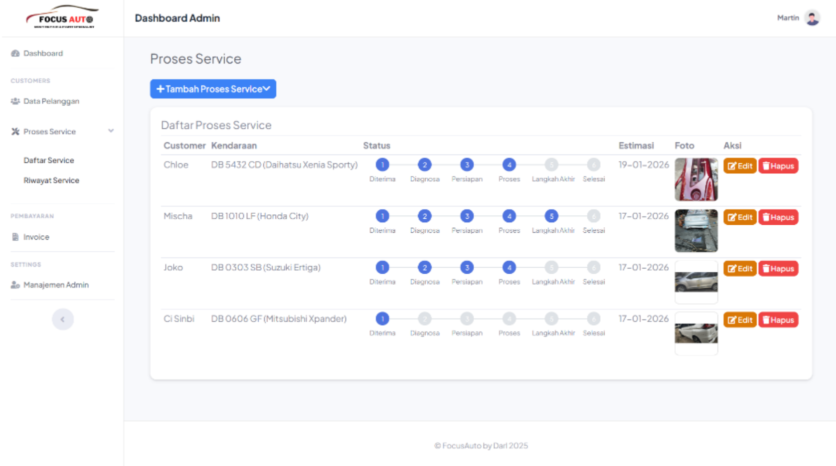


**Figure 7.** Admin Service Progress Page

**b) Customer Service Tracking Page**

The Customer Invoice page allows customers to access service invoices generated by the system. This feature provides detailed information regarding service costs and repair details.

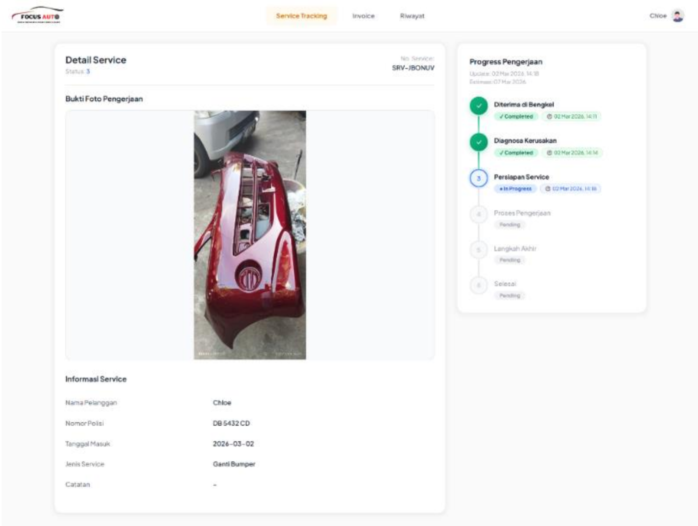


**Figure 8.** Customer Service Tracking Page

**c) Customer Invoice Page**

The Customer Invoice page allows customers to access service invoices generated by the system. This feature provides detailed information regarding service costs and repair details.


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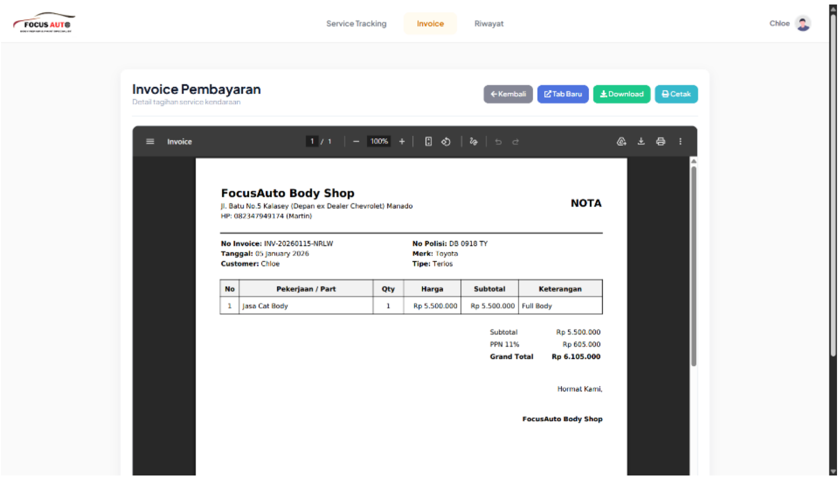


**Figure 9.** Customer Invoice Page

### 3.3 System Testing

Functional validation was conducted using Black-box testing to verify whether system functions operate according to the defined requirements. A total of 18 test scenarios were evaluated, consisting of 11 admin scenarios and 7 customer scenarios. Table 4 summarizes a selection of key test outcomes. All 18 test scenarios passed, confirming system reliability and functional compliance.

**Table 4.** Black Box Admin System Test Result

| Testing Components | Test Scenario | Input/Action | Expected Result | Actual Result |
|---|---|---|---|---|
| Admin Login Page | Admin login with valid credentials | Enter valid username and password | Admin successfully logged in and dashboard is displayed | Pass |
| Admin Login Page | Admin login with invalid credentials | Enter incorrect username or password | The system displays error message | Pass |
| Customer Data Page | Add new customer data | Input customer name, phone, address, and vehicle data | Customer data is saved and displayed in the table | Pass |
| Edit Customer Data Page | Edit customer data | Update existing customer information | Customer data is updated successfully | Pass |
| Customer Data Page | Delete customer data | Click delete button on selected customer | Customer data is removed from the system | Pass |
| Service Progress Page | Add service progress | Input service details and upload photo | Service progress data is saved and displayed | Pass |
| Edit Service Progress Page | Update service status | Change service status from Progress to Final Step | Service status is updated correctly | Pass |
| Invoice Page | Generate Invoice | Add Service items and save invoice | Invoice is generated and stored | Pass |
| Invoice Page | View and download Invoice | Click view or download invoice | Invoice is displayed and downloadable | Pass |

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| Testing Components | Test Scenario | Input/Action | Expected Result | Actual Result |
|---|---|---|---|---|
| Admin Management Page | Add new admin | Input admin information, username and Password | Admin information is saved and displayed | Pass |
| Logout | Admin Logout | Click logout button and confirm | Admin is logged out from the system | Pass |

**Table 5.** Black Box Customer System Test Result

| Testing Components | Test Scenario | Input/Action | Expected Result | Actual Result |
|---|---|---|---|---|
| Customer Login Page | Customer login with valid plate number | Enter registered vehicle plate number | Customer successfully logs in | Pass |
| Customer Login Page | Customer login with invalid plate | Enter unregistered plate number | System displays error message | Pass |
| Customer Service Tracking Page | View service tracking and progress stepper | Access service tracking page | Service progress and details are displayed | Pass |
| Customer Invoice Page | View invoice list | Open invoice page | Customer invoices are displayed | Pass |
| Customer Invoice Page | View and download invoice | Click view and download invoice | Invoice is displayed and downloadable | Pass |
| Customer History Page | View service history | Access service history page | Completed service records are displayed | Pass |
| Logout | Customer Logout | Click logout button and confirm | Customer is logged out from the system | Pass |

Overall, the results confirm that all tested functionalities operate correctly and meet the expected system requirements.

### 3.4 Usability Evaluation

Usability was measured using the System Usability Scale (SUS) questionnaire distributed to 10 FocusAuto customers. The SUS instrument consists of 10 statements measured using a five-point Likert scale [9]. The average SUS score was calculated using the standard procedure, where odd-question scores are adjusted by subtracting 1, and even-question scores are adjusted by subtracting the response from 5. The total is multiplied by 2.5 to obtain the final score. Table 6 presents the scores from 10 respondents.

The SUS score calculation follows the standard procedure proposed by Brooke [16]. For odd-numbered questions (Q1, Q3, Q5, Q7, Q9), the score contribution is calculated by subtracting 1 from the user response, as shown in Equation (1).

$$OddScore = Response - 1 \qquad (1)$$

For even-numbered questions (Q2, Q4, Q6, Q8, Q10), the score contribution is calculated by subtracting the response value from 5, as shown in Equation (2).

$$EvenScore = 5 - Response \qquad (2)$$

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After calculating the adjusted scores for all ten questions, the results are summed to obtain the total score, which ranges from 0 to 40. The final SUS score is then calculated by multiplying the total score by 2.5, as shown in Equation (3).

$$TotalScore = \sum Score \times 2.5 \quad (3)$$

**Table 6.** SUS Score per Respondent

| Respondents | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Total | Score (x2,5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 4 | 4 | 3 | 4 | 3 | 3 | 2 | 3 | 4 | 3 | 33 | 82.5 |
| R2 | 4 | 4 | 4 | 4 | 3 | 2 | 3 | 4 | 3 | 3 | 34 | 85 |
| R3 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 33 | 82.5 |
| R4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 36 | 90 |
| R5 | 3 | 3 | 2 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 32 | 80 |
| R6 | 3 | 4 | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 4 | 29 | 72.5 |
| R7 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 37 | 92.5 |
| R8 | 3 | 4 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 36 | 90 |
| R9 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 37 | 92.5 |
| R10 | 3 | 4 | 3 | 4 | 3 | 2 | 3 | 3 | 4 | 4 | 34 | 85 |
| | | | | | | | | | | | **Total Score** | 852.5 |
| | | | | | | | | | | | **Total Average Score** | 85.25 |

The results show that the system achieved an average SUS score of 85.25, which falls into the Excellent usability category (score > 80). This indicates that the developed system is highly acceptable and easy to use for FocusAuto customers. Further analysis of the questionnaire items also provides additional insights. A high score on Q7 indicates that the system successfully improves service transparency by allowing customers to monitor vehicle service progress. For Q6, most respondents selected strongly disagree, indicating that the system reduces the need for customers to contact the repair shop manually through messaging applications. In addition, Q9, which represents user satisfaction, received high scores from most respondents, suggesting a positive user experience when interacting with the system. Meanwhile, Q8, which evaluates whether the system is confusing to use, shows that all respondents selected low scores (1–2), indicating that the system interface is clear and easy to understand.

### 3.5 Discussion

The results align with previous studies by Cahyaningrum and Norhikmah [7], who found that real-time tracking features significantly improve customer satisfaction in service industries. However, unlike their study focused on laundry services, this research validates tracking efficacy specifically for automotive body repair, where service durations are longer and transparency is critical. Compared to Jondya et al. [6] and Pambudi et al. [8], who utilized the Prototyping method, this study employed Rapid Application Development (RAD). The resulting SUS score of 85.25 surpasses the 'Good' threshold (70) and compares favorably with similar web-based systems, suggesting that RAD's iterative feedback loops may yield higher usability outcomes in MSME contexts [9].

Furthermore, this study addresses a gap identified in previous literature by integrating standardized SUS evaluation into automotive workshop systems, providing quantifiable usability metrics often absent in prior technical implementations. The post-implementation interview results, where all 10 admin items received a 'Strongly Agree' response, imply a significant reduction in operational friction. This indicates that the barrier to digital adoption in this context may be less about user resistance and more about the availability of tailored, user-friendly solutions.

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However, limitations warrant acknowledgment. The system was validated in a local server environment, which may not fully reflect performance metrics under public cloud load conditions. Additionally, the usability evaluation involved ten respondents (n=10); while sufficient for a pilot case study, this sample size limits the statistical generalizability to broader populations. Finally, notification features rely on manual system updates rather than automated WhatsApp API integration. These constraints define the scope for future optimization, ensuring the current results represent a robust functional prototype ready for scaling. Ultimately, this research provides a scalable model for automotive MSMEs seeking digital transformation, enhancing both operational efficiency and customer trust in the service industry.

# 4. CONCLUSION

This study successfully designed and implemented a web-based car service monitoring system for FocusAuto Repair Shop using the Rapid Application Development (RAD) method. The system enables administrators to update vehicle service progress while allowing customers to monitor their vehicle repair status in real time through a web interface. Comprehensive functional validation confirmed that all system modules operate according to defined requirements, ensuring operational reliability. Usability evaluation indicated an excellent level of user acceptance, demonstrating that the developed system is intuitive and well accepted by users. The system improves service transparency and operational efficiency by replacing manual communication methods with a structured real-time service tracking system.

The main benefit of this research is the development of a monitoring system that allows customers to access service progress information more transparently while helping administrators manage service data more efficiently. However, this study has several limitations. The system was implemented in a local server environment and the usability evaluation involved a relatively small number of respondents, which may limit the generalization of the results.

For future work, the system can be further improved by deploying it on a public cloud environment to ensure scalability, integrating automatic notification services such as WhatsApp Business API for automated status triggers, and conducting usability evaluations with a larger sample size to obtain more comprehensive user feedback.

# 5. REFERENCES

[1] A. M. Titu, D. Grecu, A. B. Pop, and I. R. Șugar, "Service Process Modeling in Practice: A Case Study in an Automotive Repair Service Provider," *Appl. Sci.*, vol. 15, no. 8, p. 4171, Apr. 2025, doi: 10.3390/app15084171.
[2] "Kementerian Komunikasi dan Digital." Accessed: Mar. 19, 2026. [Online]. Available: https://www.komdigi.go.id/berita/siaran-pers/detail/satu-dekade-transformasi-digital-umkm-dorong-pertumbuhan-ekonomi-nasional
[3] M. F. Adham, "Analisis Implementasi Sistem Informasi: Studi Literatur," *J. Teknol. Sist. Inf.*, vol. 5, no. 1, pp. 264–275, Jun. 2024, doi: 10.35957/jtsi.v5i1.7815.
[4] T. Susilawati, F. Yuliansyah, M. Romzi, and R. Aryani, "Membangun website toko online pempek nthree menggunakan PHP dan MYSQL," *J. Tek. Inform. Mahakarya JTIM*, vol. 3, no. 1, pp. 35–44, 2020.
[5] Sowndarya, Vishal, and Udhayasankar, "Real Time Tracking System," *Int. J. Eng. Invent.*, vol. 13, no. 2.
[6] A. G. Jondya, Alva Davian Trisanto, Azizah Dinda Yukadifa, and Muhammad Rizky Noval, "PENGEMBANGAN APLIKASI BERBASIS WEB UNTUK PERAWATAN MOBIL DAN PENGELOLAAN BENGKEL DENGAN METODE PROTOTIPE," *J. Sist. Inf. JUSIN*, vol. 6, no. 1, pp. 37–50, Jun. 2025, doi: 10.32546/jusin.v6i1.3121.
[7] D. P. Mastha Cahyaningrum and N. Norhikmah, "Management of Tracking in Real Time on a Website-based Laundry Information System," *SISTEMASI*, vol. 12, no. 3, p. 797, Sep. 2023, doi: 10.32520/stmsi.v12i3.2943.
[8] A. P. Pambudi, C. K. Sastradipraja, K. P. A. Halim, and E. V. L. N. Fatich, "Information System Design for Tracking Progress and Book Order Status Using the Prototyping Method," *J. Teknol. Sist. Inf. Dan Apl.*, vol. 6, no. 3, pp. 276–282, Jul. 2023, doi: 10.32493/jtsi.v6i3.30187.

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E-ISSN 2797-2011 P-ISSN 2797-3492
https://publikasi.teknokrat.ac.id/index.php/jatika/index
DOI: https://doi.org/10.33365/jatika.v7i2.1609

[9] I. Riadi, A. Yudhana, and A. Elvina, "Analysis Impact of Rapid Application Development Method on Development Cycle and User Satisfaction: A Case Study on Web-Based Registration Service," *Sci. J. Inform.*, vol. 11, no. 1, pp. 81–94, Feb. 2024, doi: 10.15294/sji.v11i1.49590.
[10] R. H. Loho, J. D. Prang, and M. I. Takaendengan, "Sistem Infrormasi Pendaftaran Pasien Berbasis WEB di Puskesmas Taratara Kota Tomohon," *Indones. J. Intell. Data Sci.*, vol. 2, no. 2, pp. 21–31, Nov. 2023, doi: 10.35799/ijids.v2i2.50109.
[11] Z. Subecz, "Web-development with Laravel framework," *Gradus*, vol. 8, no. 1, pp. 211–218, 2021, doi: 10.47833/2021.1.CSC.006.
[12] M. O. contributors Jacob Thornton, and Bootstrap, "Get started with Bootstrap." Accessed: Mar. 19, 2026. [Online]. Available: https://getbootstrap.com/docs/5.3/getting-started/introduction/
[13] M. T. Abdillah, I. Kurniastuti, F. A. Susanto, and F. Yudianto, "Implementasi Black Box Testing dan Usability Testing pada Website Sekolah MI Miftahul Ulum Warugunung Surabaya," *J. Comput. Sci. Vis. Commun. Des.*, vol. 8, no. 1, pp. 234–242, Jul. 2023, doi: 10.55732/jikdiskomvis.v8i1.897.
[14] N. M. D. Febriyanti, A. A. K. Oka Sudana, and I. N. Piarsa, "Implementasi Black Box Testing pada Sistem Informasi Manajemen Dosen," *JITTER J. Ilm. Teknol. Dan Komput.*, vol. 2, no. 3, p. 535, Nov. 2021, doi: 10.24843/JTRTI.2021.v02.i03.p12.
[15] S. Afrizal, R. Prihatni, and S. Priyo Hastono, "Evaluation of the quality of health applications using the System Usability Scale," *J. Manaj. Inf. Kesehat. Health Inf. Manag.*, vol. 9, no. 1, pp. 1–9, Jun. 2024, doi: 10.51851/jmis.v9i1.492.
[16] J. Brooke, "SUS: A quick and dirty usability scale," *Usability Eval Ind*, vol. 189, Nov. 1995.

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