Fixera: A Geo-Located Mobile Application for Convenient Auto Fix Locator in Bani, Pangasinan

Rygean V. Prado, Mark Leslie D. Melendez, Rocelle C. Versoza, Elaine B. Urbi, Marcelino M. Gajo Jr.

Bachelor of Science in Information Technology, Pangasinan State University Philippines

DOI: https://dx.doi.org/10.47772/IJRISS.2025.9020306

Received: 01 February 2025; Accepted: 05 February 2025; Published: 20 March 2025

ABSTRACT

Fixera a geographically-located mobile application designed to address the challenges faced by vehicle owners in Bani, Pangasinan, in accessing reliable automotive repair services. The primary objective was to evaluate the effectiveness of the Fixera app in improving the efficiency and transparency of locating, booking, and utilizing auto repair services. Using a descriptive developmental research design with the Agile methodology, data were collected through surveys, interviews, and observations. The results revealed that traditional methods were inefficient, and Fixera successfully addressed these inefficiencies with GPS-enabled features, appointment scheduling, and emergency roadside assistance. The study suggests that with continuous improvements, Fixera could serve as a model for enhancing the convenience and reliability of automotive services in rural and urban like Bani Pangasinan.

Keywords: Fixera, mobile application, automotive repair services, GPS technology, usability, software development, user feedback, rural areas, transparency.

INTRODUCTION

Automotive repair services are essential for vehicle owners to maintain mobility and safety. In Bani, Pangasinan, locating reliable repair shops presents a significant challenge, primarily due to the reliance on traditional methods like word-of-mouth and personal experiences. These traditional methods are time-consuming, inefficient, and lack transparency regarding service quality and pricing. The Fixera mobile application was developed to address these challenges by providing a centralized platform that integrates GPS technology to locate repair shops, schedule appointments, and access emergency roadside assistance. The application aims to enhance convenience and efficiency for vehicle owners while fostering transparency and reliability in the local automotive repair industry. This study evaluates:

1. The current practices of vehicle owners in finding repair services.
2. The challenges faced in accessing reliable automotive services.
3. The development of the Fixera application to address these challenges.
4. The usability, functionality, and acceptance of the system among its target users.

METHODOLOGY

Research Design

This study employed a descriptive developmental research design and followed the Agile methodology for system development. Agile methodology emphasizes iterative progress, with five phases: Requirements Planning, User Design, Development, Testing, and Deployment.

Figure 1: Adopted Agile Methodology for System Development

Data Collection Methods

- **Surveys**: Administered to vehicle owners and IT experts to gather Feedback on usability, functionality, and
- **Interviews**: Conducted with auto repair shop owners and technicians to understand their challenges and
- **Observation**: Documented current practices and processes within repair shops to identify gaps and Scale Statistical limits Ratings Descriptive interpretation in efficiencies.
- **Internet Research**: Reviewed related studies and existing mobile applications 21- Excellent Works t exceptionally well for insights on effective design and features.4 3.41- 4.20Very Good They work well

Evaluation Metrics

The system was evaluated using the ISO/IEC 25010 software quality model, focusing on the following aspects:

1. **Functionality**: Completeness, accuracy, compliance
2. **Performance Efficiency**: Time behaviour, resource utilization
3. **Usability**: Learnability, operability, user error protection
4. **Reliability**: Maturity, fault tolerance, recoverability
5. **Security**: Confidentiality, integrity, non-repudiation
6. **Portability**: Adaptability, replaceability

Respondents of the Study

The study involved 20 respondents, including auto repair shop owners, technicians, and IT experts, selected through purposive sampling. These respondents provided targeted insights into the system's development and evaluation.

Table 1: Respondents of the Study

Respondents	Number of Respondents
Owners	5

Technicians	5
IT Experts	2
Customers	8
Total Respondents	20

Scale of measurement: The proponents used scale of measurement to measure the acceptance level and enhancement of the developed system.

Table 2: Scale of Measurement

Scale	Statistical limits	Ratings	Descriptive interpretation
5	4.21-5.00	Excellent	works exceptionally well
4	3.41-4.20	Very Good	They work well
3	2.61-3.40	Good	Meets the expectation
2	1.81-2.60	Fair	It is okay, but it could
1	1.00-1.80	Poor	It needs a lot of improvement

RESULTS AND DISCUSSIONS

Results

Current Practices

Vehicle owners in Bani, Pangasinan, typically rely on word-of-mouth and informal networks to locate repair shops. This method is inefficient, involving long waiting times and limited options for verifying service quality. Payment methods are mainly cash-based, and communication with repair shops is unstructured.

Challenges Identified

1. **Time-Consuming Processes**: Searching for repair shops, particularly in emergencies, require significant
2. **Lack of Transparency**: Customers have difficulty finding reliable information regarding service quality, pricing, and availability.
3. **Technological Barriers**: Limited smartphone ownership and internet access impede the adoption of modern

Fixera Features

The Fixera app includes several key functionalities:

1. **Geographically-Located Search**: Displays nearby repair shops using integrated Google Maps.
2. **User Reviews and Ratings**: Enhances transparency and aids decision-making.
3. **Appointment Scheduling**: Enables users to book appointments for both walk-in and on-site repairs.
4. **Alternate Recommendations**: Suggests nearby repair shops when the preferred one is unavailable.
5. **Profile Management**: Lets users update personal information and track service history.

System Evaluation

The system was evaluated based on user feedback:

1. **Functionality**: Rated **excellent** (4.22), indicating high completeness and
2. **Performance Efficiency**: Rated excellent (4.30), showing fast response times and efficient resource use.
3. **Usability**: Rated excellent (4.22), with users finding the application intuitive and easy to navigate.
4. **Reliability**: Rated very good (4.14), with fault tolerance and recoverability.
5. **Security**: Rated very good (4.05), with suggestions for improvement in non- repudiation features.

DISCUSSION

Addressing Identified Challenges

Fixera addresses the inefficiencies of traditional methods by providing a user- friendly platform that simplifies the process of locating automotive repair services. The GPS-enabled search feature helps users find nearby repair shops more efficiently, while user reviews and ratings promote transparency and trust between customers and service providers.

Implications for Users and Repair Shops

- **For Users**: Fixera improves accessibility to repair services, especially during emergencies, by providing an intuitive and easy-to-use platform. The app is also accessible to users with minimal technical skills.
- **For Repair Shops**: The app increases visibility and customer reach, helping repair shops attract more clients and streamline service delivery.

Areas for Improvement

While the app received positive feedback, several areas were identified for improvement:

1. **User Training**: Providing tutorials or demonstrations to improve user familiarity with the app.
2. **Security Features**: Enhancing data security, including the implementation of two-factor authentication.
3. **Expanded Features**: Incorporating features like price comparisons and loyalty programs to improve user engagement and service transparency.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. Vehicle owners in Bani, Pangasinan, face significant challenges in finding reliable repair services due to the inefficiencies of manual methods.
2. Fixera successfully addresses these issues by offering a centralized platform with GPS-enabled features, appointment scheduling, and emergency
3. The application has high user acceptance, suggesting its potential to enhance service access and improve customer satisfaction.
4. Future development should focus on user training, security enhancements, and the addition of advanced functionalities to maintain the app's relevance and effectiveness.

Recommendations

1. **User Engagement**: Develop in-app tutorials and FAQs to help users navigate the application.
2. **Transparency and Trust**: Implement a ranking system for repair shops based on user feedback and performance
3. **Enhanced Communication**: Add messaging options for direct communication between customers and repair shops.
4. **Service History Management**: Include features to track past appointments, repairs, and payments.
5. **Future Expansion**: Introduce advanced features like price comparisons, loyalty programs, and multilingual support.

REFERENCES

Books

1. Agbo, C. O. (2011). A critical evaluation of motor vehicle manufacturing in Nigeria.
2. Creswell, J. W. (2018). Research design: Qualitative, quantitative, and mixed methods approach.

Journal Articles

1. Agboneni, O., Ejilah, I. R., Viza, E., Omorogbe, O., Daser-Adams, J., & Adakole, S. O. (2023). Towards safer automotive practices and sustainable end-of-life vehicle management in the Nigerian automotive service sector. Journal of Automotive Research, 12(3), 45-59.
2. Brown, J., et al. (2019). Enhancing customer satisfaction through communication and visibility. Journal of Service Management, 25(4), 230-245. Dos Santos Pilar, M. D. F. (2019). Automobile repair scheduling: A real case. Journal of Automotive Services, 18(2), 99-
3. Garcia, M., et al. (2021). Technological aspects of mobile applications for auto repairs. Journal of Mobile Computing, 30(1), 56-
4. Garcia, R., & Reyes, P. (2019). Effectiveness of rating systems in local service industries. International Journal of Service Quality, 15(2), 105-120.
5. Hernandez, A., & Santos, L. (2019). Factors influencing customer satisfaction in rural auto repair services. Automotive Industry Journal, 27(3), 180-193.
6. Hong, , Kim, B., & Oh, S. (2020). The relationship benefits of auto maintenance and repair service: A case study of Korea. Journal of Auto Maintenance, 22(4), 211-225.
7. Ignacio, A. E. (2021). Implementation of an Android mobile location-based service application for general auto repair shops. Journal of Mobile Applications, 14(5), 90-
8. Lee, H., Kim, S., & Martinez, J. (2022). Enhancing user engagement and satisfaction through personalization in geo-located mobile applications for auto repair services. Journal of User Experience, 17(3), 78-
9. Lewandowski, R., & Olszewska, J. I. (2020). Automated task scheduling for the automotive industry. Automotive Systems Journal, 35(1), 66-
10. Li, Y., et al. (2020). Creation of a geo- located mobile application for auto repairs in urban areas. Urban Technology Journal, 21(2), 133-
11. Odiboh, O., Nwosu, E., Ekanem, T., & Oyedepo, T. (2022). Public acuity, home-made vehicles, and public relations in Nigeria. Automotive Development Review, 30(1), 50-
12. Paul, E. (2020). The state of Nigeria's automotive industry and its far-reaching effects. African Business Review, 12(3), 101-112.
13. Reyes, L., & Santos, M. (2023). Accessibility of auto repair services in rural Philippine communities. Philippine Automotive Journal, 13(1), 22-
14. Santos, M., & Reyes, L. (2023). Accessibility of auto repair services in rural Philippine communities. Journal of Rural Services, 20(2), 56-

15. Smith, A., Johnson, B., & Garcia, C. (2023). Impact of mobile applications on automotive service accessibility in rural areas. Journal of Rural Transportation, 14(3), 91-
16. Venugopal, Y., Quang-Ngoc, P., & Eunseok, L. (2020). Modification point aware test prioritization and sampling to improve patch validation in automatic program repair. Software Engineering Journal, 28(4), 120-
17. Wang, A.Y.-M. (2022). The impact of the manufacturing sector on economic growth in Nigeria. Economic Development Journal, 19(5), 200-215.
18. Wang, , Hernandez, J., & Nguyen, T. (2021). Consumer trust and satisfaction in geo-located mobile applications for auto repair: A comparative study of urban and rural users. Mobile Technology Journal, 24(2), 145-160.
19. Cao, H., He, Z., Meng, Y., & Chu, Y. (2022). Automatic repair of Java programs weighted fusion similarity via genetic programming. Journal of Computing Research, 22(3), 75-90.