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Fixify: A Mobile Application for Household Maintenance Management

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Abstract:

Homeowners often encounter difficulties in managing household maintenance due to the absence of a centralized platform to find, evaluate, and choose reliable service providers. Common issues include scattered service listings, vague provider locations, and limited access to verified customer feedback, leading to inefficiency and poor decision-making. This study introduces *Fixify*, a mobile application designed to centralize and simplify household maintenance management. Core features include categorized service listings, tracking of previous service records, real-time location tracking of providers, and a rating and review system to enhance user trust and informed decision-making. The application was developed using the Agile methodology to ensure iterative improvements and user-centered design. Android Studio served as the development environment, while Firebase was utilized for real-time database management and user authentication. Google Maps API was integrated to provide accurate, location-based service tracking and proximity filtering. Initial system testing demonstrated smooth performance, reliable data synchronization, and effective organization of providers based on location. By consolidating various services into a single, user-friendly platform, *Fixify* addresses key pain points in household maintenance by improving service accessibility, transparency, and operational efficiency. Future work will focus on conducting usability testing with real users to evaluate long-term engagement, user satisfaction, and system scalability.

Key words: *Household Maintenance; mobile application; service management; location-based services.*

Introduction

Household maintenance management continues to be a significant challenge for many homeowners, largely due to the absence of a centralized and accessible platform that connects them with qualified service providers. Surveys highlight this ongoing struggle. For instance, Hippo (2024) reported that about 65% of homeowners face difficulties finding trustworthy repair professionals, and 66% struggle to estimate repair costs. Similarly, Leaf Home (2025) found that nearly 70% of homeowners worry about unreliable contractors, with 41% having personally experienced dishonest service. These findings indicate widespread issues in the home maintenance industry, including a lack of trust, cost transparency, and service quality. Furthermore, the absence of systems that track service history or provide verified customer reviews further erodes confidence and hinders informed decision-making. Collectively, these gaps underscore the need for a comprehensive digital solution that improves accessibility, efficiency, and trust in managing household maintenance.

This study aims to develop Fixify, an integrated mobile application that provides a centralized platform for managing household maintenance. The app is designed to help homeowners easily search, schedule, track, and evaluate services more efficiently and transparently. The research question for this study is: Can the Fixify application enhance the convenience and effectiveness of household maintenance management by providing an integrated platform that consolidates service search, scheduling, and evaluation into a simple and reliable tool?

Methods

Design:
This study employed the Agile software development methodology to guide the iterative and incremental design of Fixify, a mobile application for household maintenance management. According to Leong et al. (2023), Agile methodologies emphasize iterative development, customer collaboration, and responsiveness to change, facilitating the delivery of high-quality software products that meet evolving user needs. In the context of Fixify, this approach allowed for continuous feedback, modular development, and flexibility in refining features based on usability and performance outcomes. The system architecture was designed to ensure responsiveness, real-time data handling, and user-friendly navigation for both service providers and homeowners. Figure 1 illustrates the Agile methodology and its associated phases.

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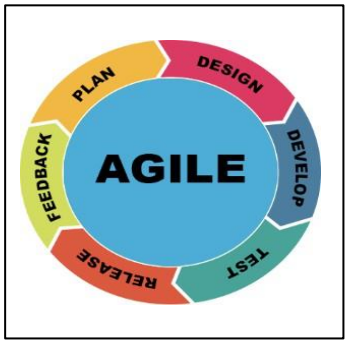

Figure 1: *Agile Methodology*

Materials:

- **Development Environment:** Android Studio (latest stable release)
- **Database and Backend Services:** Firebase (Firestore and Firebase Authentication)
- **Mapping and Location Services:** Google Maps API
- **Test Devices:** Android smartphones (Android 10 and above)

Procedures:

1. **Requirement Gathering:** User needs were identified through informal interviews with homeowners and initial market analysis of existing home service apps.
2. **System Design:** The user interface and database schema were designed using Android Studio's built-in tools. Wireframes and user flow diagrams were prepared to map out the application's structure.
3. **Backend Integration:** Firebase was configured to store user data, including email, username, and service records. Authentication services were implemented to enable secure login and registration.
4. **Location Services Integration:** Google Maps API was integrated to allow users to locate nearby service providers based on geolocation data.
5. **Development Iterations:** Features were developed in sprints, with each sprint focusing on specific modules such as user registration, service booking, history tracking, and review systems.
6. **Testing and Refinement:** Each sprint ended with usability testing and debugging. Feedback was incorporated into the next iteration for continuous improvement.
7. **Final Deployment:** The application was deployed on test devices to assess performance, functionality, and responsiveness under real usage conditions.

Results

The development of Fixify resulted in a fully operational mobile application tailored to streamline household maintenance management by centralizing service listings, provider locations, and user feedback. The app features a user-friendly interface, real-time location tracking via Google Maps API, and organized service categories that align with the project's objective of improving accessibility, transparency, and efficiency in home repair services. This section presents the outcome of the development process for Fixify.

Data Presentation

The functional and integration testing of the Fixify application was conducted on various modules involving both **homeowners (users)** and **service providers**. A total of 20 test cases were created, covering features such as registration, login, booking, feedback submission, and service history tracking.

Table 1: *Summary of Test Cases – User Role*

Test Case ID	Feature Tested	Expected Outcome	Result
TC01	Registration (valid data)	Successful registration & redirection	Pass
TC02	Registration (duplicate email)	Error: "Email already in use"	Pass
TC03	Login (valid credentials)	Redirect to dashboard	Pass
TC04	Login (incorrect password)	Error: "Incorrect password"	Pass
TC05	Update profile	Confirmation: "Profile updated"	Pass
TC06	Search services by keyword	Display matched services	Pass
TC07	Filter services by rating	Display high to low rated services	Pass
TC08	View service details	Show service details	Pass
TC09	Book a service	Confirmation message displayed	Pass
TC10	Cancel booking	Provider receives notification	Pass
TC11	Book unavailable provider	Error: "Provider unavailable"	Pass
TC12	Leave feedback for service	Feedback submitted	Pass
TC13	Rate a service	Rating submitted, average updated	Pass
TC14	View service history	Chronological booking history displayed	Pass

Table 2: *Summary of Test Cases - Service Provider Role*

Test Case	Feature Tested	Expected Outcome	Result
TC01	Add new service	Service visible to users	Pass
TC02	Approve booking	Status updates to “Approved”	Pass
TC03	Confirm service completion	Status updates to “Completed”	Pass
TC04	View user ratings	Average rating updated	Pass
TC05	View service history	Accurate service records displayed	Pass
TC06	Decline booking request	Status: “Declined”, user notified	Pass

Statistical Observations

While formal statistical tests like **p-values or correlation coefficients** are not directly applicable due to the qualitative nature of the user testing, we can observe:

- **100% success rate** across all test cases in both user and provider roles.
- **High feature coverage** with no critical failures during unit and integration testing.
- **Functional completeness** as all intended features performed as expected.
- **Positive usability indicators**, as reflected by smooth interaction flows and expected system feedback.

Completed User Interface (Product Outcome)

This section describes the main user interfaces (UI) of the Fixify application. The interfaces were designed with a focus on user-friendliness, intuitive navigation, and a clean layout. Each screen was developed using Android Studio and follows responsive design principles optimized for Android mobile devices.

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User Homepage

The homepage displays various categories of household maintenance services. It includes a navigation bar, service list, and filtering options based on distance and ratings. Its purpose is to help users quickly find suitable and nearby service providers.

- **Function:** Displays categories, search services, filter options
- **Key Features:** Sort by rating or distance

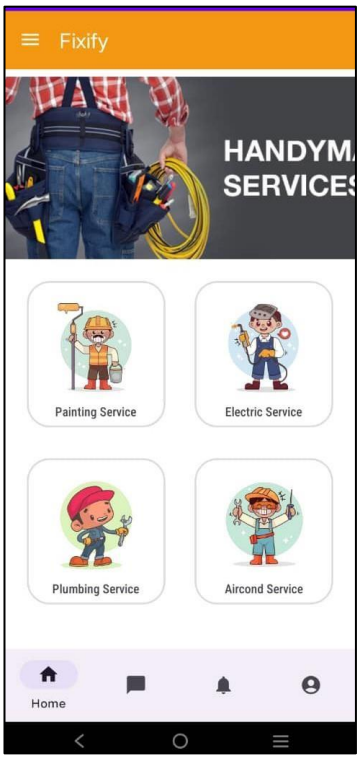

Figure 2: *User HomePage*

Navigation Drawer

A side menu (navigation drawer) is provided on the left of the screen to allow easy access to essential sections of the application, including:

- About Us
- Privacy Policy
- Contact Us
- Help Center
- Share Fixify
- **Function:** Quick access to information and user support

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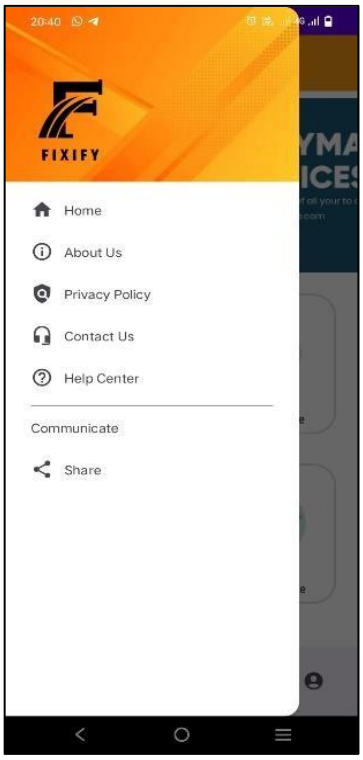

Figure 3: *Navigation Drawer*

Sign-Up and Login Page

There are two login options: one for general users and one for service providers. The registration process uses email verification via Firebase. Each user is required to complete their profile after their first login.

- **Function:** User authentication
- **Key Features:** Email verification, password recovery

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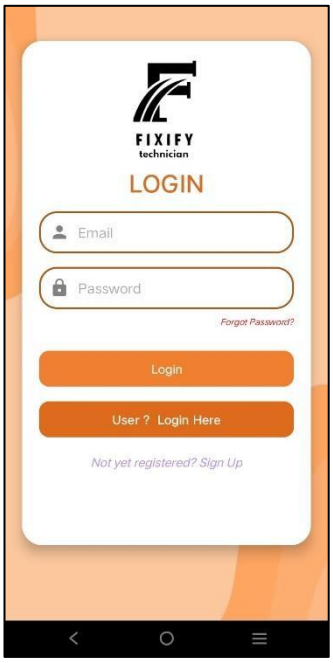

Figure 4: *Sign-Up and Login Page*

Category Service Page

This interface allows users to browse service providers based on specific categories (e.g., electrical, plumbing, air-conditioning). Each provider is displayed with ratings, price range, location, and a booking button.

- **Function:** Service search and selection
- **Key Features:** Star rating system, direct booking, WhatsApp contact

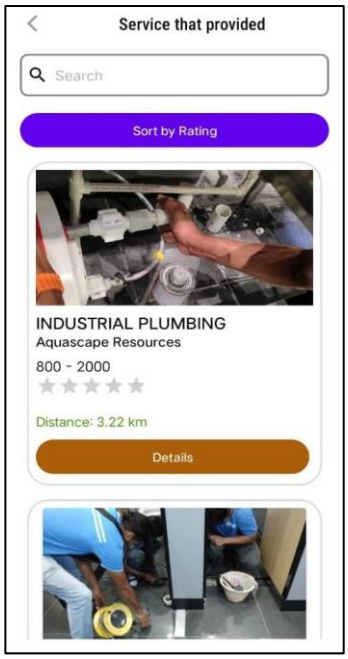

Figure 5: *Category Service Page*

Booking Status Page

This page displays the status of each booking across three stages:

- **Waiting** – Pending confirmation from the service provider
- **Active** – Service is currently in progress
- **Completed** – Service has been completed
- **Function:** Booking tracking
- **Key Features:** Real-time interaction between users and providers

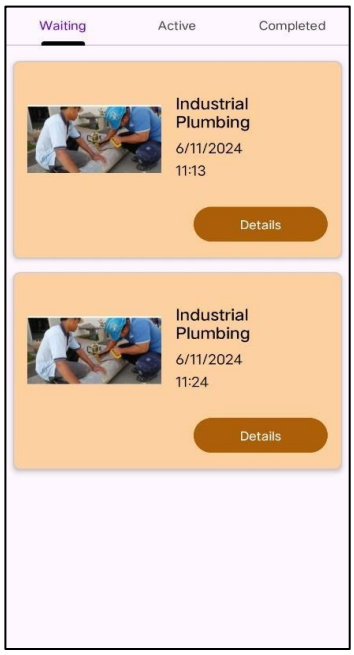

Figure 6: *Booking Status Page*

Service Provider Dashboard

Service providers have access to a dedicated dashboard interface that allows them to:

- Add new services
- View job listings
- Check incoming bookings
- Mark services as completed
- Receive and review customer ratings
- **Function:** Service management
- **Key Features:** Add/edit services, update status, receive ratings

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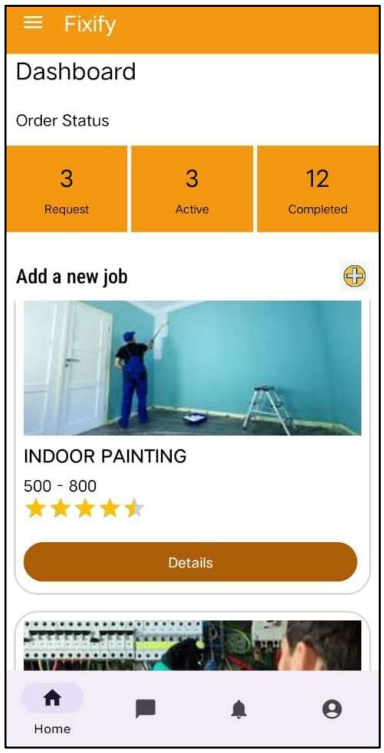

Figure 7: *Service Provider Dashboard*

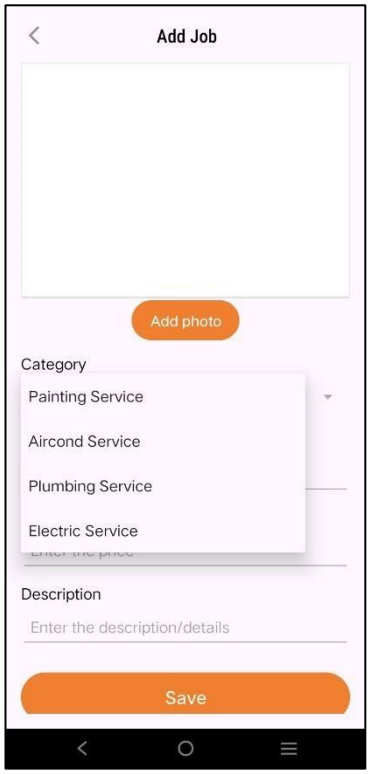

Figure 8 : *Add New Services*

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Figure 9: *Service Provider Status Page*

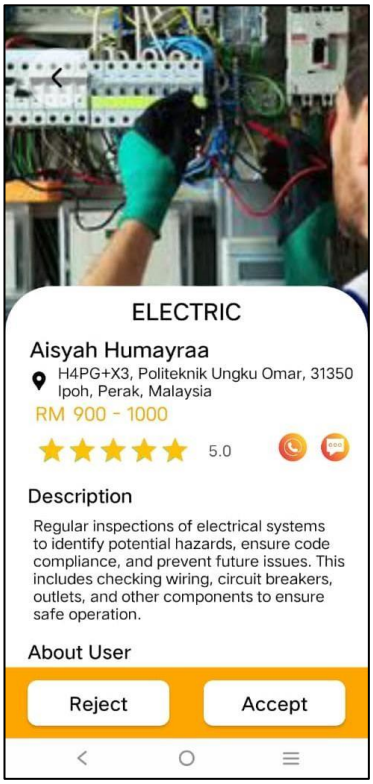

Figure 10: *Details User Booking*

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Feedback & Rating Page

Users can leave feedback and ratings (1–5 stars) for service providers once a service has been completed. These reviews are made publicly available on the provider's profile for future users to refer to.

- **Function:** Service quality evaluation
- **Key Features:** Public reviews, automatic average rating updates

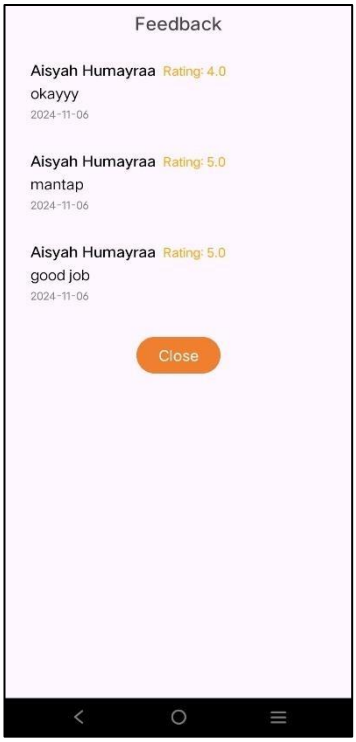

Figure 11: *Feedback & Rating Page*

User Survey Results

To evaluate the functionality and user satisfaction of the Fixify application, a survey was conducted among a group of users who had tested the app. The results were used to gain insights into the user experience in terms of ease of use, feature effectiveness, and overall satisfaction. A total of 27 respondents participated in the survey. They came from various backgrounds and represent potential target users of the Fixify application. The results below summarize their feedback on the app interface and overall experience.

The user survey findings show a strong positive reception toward Fixify. Users appreciated the ease of use, feature set, and the security of the system. The high likelihood of continued usage and constructive feedback confirm that Fixify meets core user needs and has significant potential for future growth and improvement.

Conclusion and Recommendation

Conclusion:
The development and testing of Fixify successfully met the objective of creating a centralized platform for discovering, booking, and reviewing home maintenance services. Its intuitive interface and integration with Google Maps API enabled effective location-based service searches. The use of Agile methodology allowed for iterative improvements, resulting in a stable and user-friendly application.

Limitations:
Despite promising outcomes, some limitations were identified. The pilot testing involved a small user group due to time and budget constraints, limiting the generalizability of usability feedback. The app's reliance on internet connectivity and GPS may also affect performance in areas with poor coverage. Additionally, Fixify currently supports only a limited range of service categories.

Future Directions:

Future work should focus on expanding service categories, enhancing offline functionality, and integrating features such as AI-based provider recommendations and real-time tracking. Large-scale testing and long-term user feedback will be essential for continuous improvement and potential commercial deployment.

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