

MFI Network: A Web-Based Platform for Handyman Job Opportunities

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Abstract

Furniture shopping has evolved significantly with the rise of e-commerce, MFI Hardware, a prominent hardware shop in Kampung Melayu Sungai Buloh, Selangor, serves as a key resource for handymen, customers, and subcontractors. However, reliance on traditional methods like handwritten notes and business cards has led to operational inefficiencies, including cluttered records and difficulty in accessing information. This project introduces a digital platform to address these challenges by enabling handymen to register and promote services, customers to search for and book handymen seamlessly, and subcontractors to generate accurate budgets with access to hardware prices. With a user-friendly design and usability testing, the platform aims to create a cleaner, more organized workspace, enhance customer satisfaction, and boost the visibility of local handymen. MFI Hardware will strengthen its reputation as a modern, community-focused business while fostering local economic growth.

1. Introduction

MFI Hardware, a prominent hardware store, is owned and operated by Mr. Mohd Farhan Bin Ibrahim. The shop is well-known for providing a wide range of hardware supplies, including electrical, plumbing, construction, and painting materials. Beyond its role as a hardware supplier, MFI Hardware has become a connecting point for local handymen and customers seeking repair and renovation services. Traditionally, handymen leave their contact details at the shop counter on handwritten notes or business cards, enabling customers to hire skilled workers.

While this method has facilitated connections in the past, it has increasingly resulted in cluttered and disorganized records, making it difficult to efficiently manage and retrieve contact information. Customers often struggle to find the right handyman due to the lack of an accessible and structured system for browsing services. Additionally, subcontractors face challenges in obtaining accurate price quotations and generating budgets for their projects, as these processes rely on manual and time-consuming methods.

These operational inefficiencies highlight the need for a digital solution to address the growing demands of customers, handymen, and subcontractors. This project proposes the development of an online platform that will streamline operations at MFI Hardware. The system will allow handymen to register and advertise their services, enabling customers to search for and book services seamlessly. It will also provide subcontractors with tools to place orders, generate budget estimates, and obtain price quotations for hardware supplies, thus optimizing their workflows. Structured customer engagement systems play a crucial role in improving both service accessibility and customer satisfaction [1].

By leveraging object-oriented system design, this platform will ensure robust functionality and scalability. Rigorous testing will guarantee ease of use and reliability, delivering a seamless experience for all stakeholders. Ultimately, the project aims to enhance service visibility, optimize resource management, and strengthen customer engagement, transforming MFI Hardware into a modern, professional, and community-centered business. Such platforms optimize customer interactions while enhancing operational efficiency [2].

2. Related Work

This section discusses the background of the study, the technologies used, and the results of the comparative analysis between existing websites.

2.1 MFI Hardware

MFI Hardware is a reputable hardware store located in Kampung Melayu Sungai Buloh, Selangor, owned and operated by Mr. Mohd Farhan Bin Ibrahim. MFI Hardware not only sells hardware but also serves as a vital link between clients and nearby handymen. The digitization of hiring processes has transformed how businesses recruit handymen and connect customers with service providers. Digital platforms, such as task-matching and handyman booking systems, have automated application handling and service matchmaking, enabling faster and more informed decisions.

For small to medium-sized enterprises (SMEs) like MFI Hardware, adopting tailored digital solutions can significantly enhance operational efficiency. Implementing a digital system to manage handyman information and customer interactions reduces manual errors, improves response times, and strengthens business relationships. Features like searchable contact directories and automated quotation tools streamline processes and contribute to better customer satisfaction [3].

2.2 Visual Studio Codes

By utilizing PHP, HTML, and a MySQL database managed through phpMyAdmin, Visual Studio Code (VS Code) serves as an ideal development environment. It efficiently handles both front-end HTML and back-end PHP code, offering features like syntax highlighting and intelligent code completion. Integrated development environments (IDEs) like VS Code improve coding efficiency and reduce syntax errors through real-time feedback [4]. While phpMyAdmin is used for database administration, PHP scripts, written in VS Code, establish direct connections to MySQL to perform data operations, often alongside a local server stack like XAMPP. Using local server environments like XAMPP streamlines testing and deployment during the early development stages [5]. Additionally, extensions for PHP debugging and direct database browsing enhance the workflow, creating a seamless and productive development experience. Emphasized that such tools collectively contribute to faster development cycles and improved software quality [6].

2.3 Comparative Analysis

Comparative analyses were conducted on three related websites to the proposed system. The three applications are LocalService.my, Aathaworld Sdn Bhd, and Recommend.my, as shown in Fig. 1 (a), (b), and (c), respectively. Table 1 shows the results of the comparative analysis.

The analysis was conducted based on the following key features: Advertising Service, Report History, Registering, Login, and Budgeting. Comparative analyses were conducted on three related websites to the proposed system. The three applications are LocalService.my, Aathaworld Sdn Bhd, and Recommend.my, as shown in Fig. 2(a), (b), and (c), respectively. Table 1 shows the results of the comparative analysis. The analysis was conducted based on the following key features: Advertising Service, Report History, Registering, Login, and Budgeting. Comparative analysis helps identify functional gaps and opportunities for innovation by benchmarking existing solutions [6]. Furthermore, evaluating usability and feature completeness across multiple platforms enhances the design of user-centered systems [7]. Previous studies also emphasize the importance of including core functionalities like budgeting and reporting to improve customer satisfaction and platform efficiency [8].



Fig.1 The user interfaces of existing systems (a) LocalService.my; (b)Aathaworld Sdn Bhd; (c)Recommend.my

Table 1: Application Comparison

System/Feature	LocalService.my	Aathaworld Sdn Bhd	Recommend.my	MFI Network
Login	Intuitive and specific	Intuitive and specific	Intuitive and specific	Intuitive and specific
Registering	Intuitive and specific	Intuitive and specific	Intuitive and specific	Intuitive and specific
Advertising Service	Have	Have	Have	Have
Budgeting	None	None	None	Have
Report History	Have	Have	Have	Fully integrated

Table 1 presents a comparison of features across four websites which are LocalService.my, Aathaworld Sdn Bhd, and Recommend.my against a proposed MFI Network system, focusing on key features. All systems offer intuitive and specific login and registration processes, alongside advertising services. A notable distinction arises in budgeting capabilities: only the MFI Network provides this feature, while the others lack it. Regarding report history, LocalService.my, Aathaworld Sdn Bhd, and Recommend.my all have this functionality, but the MFI Network distinguishes itself with a fully integrated report history, suggesting a more comprehensive and seamless experience.

3. Methodology

A methodology provides a systematic framework for planning, developing, and implementing a project effectively, ensuring it meets objectives while mitigating risks. In software development, selecting the right methodology is critical as it impacts task prioritization, development cycles, and delivery. Appropriate methodologies contribute to reducing complexity and improving team collaboration [9]. Moreover, emphasize that the adoption of flexible development methodologies increases adaptability to changing requirements and enhances project success rates [10].

3.1 Model Prototype Phase

This project adopts the Prototyping Model, an iterative and incremental approach that emphasizes flexibility, collaboration, and customer feedback. Agile supports adaptive planning and continuous improvement, making it ideal for projects with evolving requirements. Fig.2 illustrates the six phases in Prototyping Model, and Table 2 will discuss the output of the five phases in Prototyping Model.

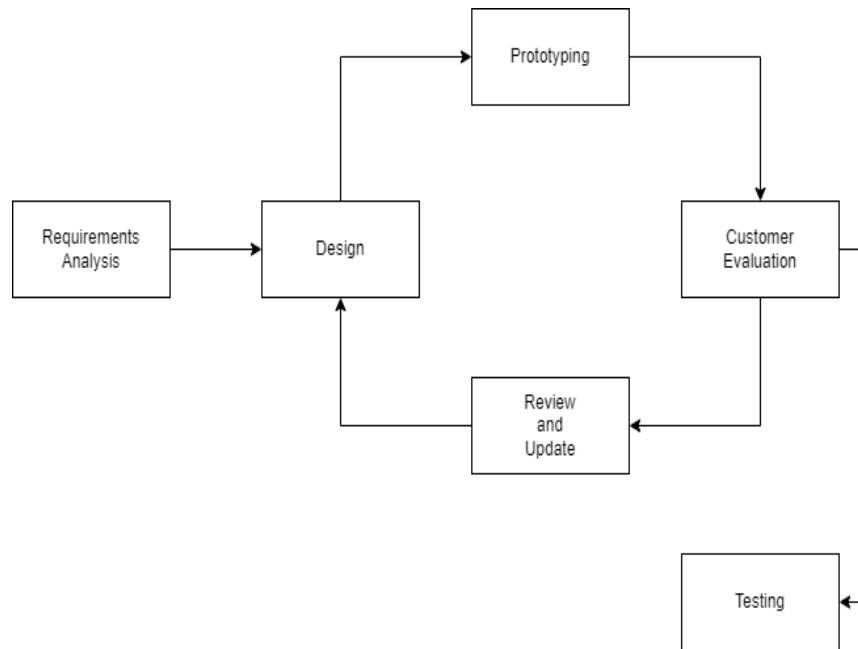


Fig. 2 Prototyping Model

Table 2 Website Development Workflow

Phase	Activities	Outputs
Phase 1: Requirement Gathering and Analysis	- Conduct interviews with the store owner and potential users - Gather insights on user preferences and expectations - Analyze functional and non-functional requirements	- Defined functional and non-functional requirements - Project scope and objectives
Phase 2: System Design	- Create storyboards for user interface visualization - Develop UML diagrams - Design class diagrams for object-oriented structure	- Architectural blueprint of the system - Storyboard and UML diagrams
Phase 3: Prototyping	- Develop app using Visual Studio Code. - Build user interface. - Implement key features (e.g., Register, login, booking).	- Functional website. - Implemented features such as register, login, booking.

Table 2 (cont)

Phase 4: Customer Evaluation	• Show the prototype to the customer	• Review from customer about the system.
Phase 5: Review and Update	• Review the feedback • Update the code according the review.	• Functional website. • Usability and performance improvements
Phase 6: Testing	• Perform functional testing (e.g., booking, payment) • Conduct usability testing • Carry out performance testing	• Test results identifying errors or defects • Usability and performance improvements

3.2 Functional Requirements

In this analysis phase, it is necessary to understand the functional requirements that the system must fulfill to ensure its successful development and operation. Functional requirements specify the system's expected behaviors, features, and capabilities that support business needs. They describe *what* the system should do, including data processing, user interactions, and system responses. Table 3 summarizes the key functional requirements identified for this project, providing a clear foundation for the system's design and implementation.

Table 3 Functional Requirement

Modules	Functionalities
Login	• This module allows users to login into the system
Register	• This module allows users to register into the system
Manage Detail	• The handyman should be able to manage their detail (name and related information)
Manage User	• Admin can delete user from the system (nonactive or problematic).
Manage Inventory	• Displays available items with details (price, quantity). • The owner can manage the item inside an inventory.
Booking	• Customers will be able to book a handyman. • Know the status of their booking.
Monitoring Schedule	• Handyman can approve the customer booking. • Display the booking details in the calendar.

Table 3 (cont.)

Budget and Project	• Make a quotation of total cost of the selected item. • Customer can post a project and will be posted at handyman page. • Handyman can offer their price to the customer.
Manage Payment	• Customer can pay the booking and project payment to the selected handyman. • Handyman can check the payment status.
Manage Report	• Admin can generate report of booking, project, and the payment.

3.3 Non-Functional Requirements

In addition to the functional aspects, non-functional requirements define the *quality attributes* of the system, specifying how the system should perform under various conditions. These requirements address aspects such as usability, reliability, performance, security, and maintainability. They ensure that the system operates efficiently and meets user expectations in terms of speed, stability, and scalability. Table 4 outlines the non-functional requirements identified for this project, helping to guide the system's design to meet quality and performance standards.

Table 4 Non-Functional Requirement

Requirement	Description
Scalability	• Handle an increasing number of handyman records.
Availability	• Operate during business hours with 99% uptime.
Usability	• Intuitive interface for user.

3.4 System Designs

The System Designs phase is a pivotal step in converting the project's requirements into a structured plan that guides the system's architecture and user interface. During this phase, we create both high-level and detailed design artifacts to visualize user experience, interactions, and system workflows.

3.4.1 Use Case Diagram

A use case diagram visually represents the interactions between users (actors) and the system, highlighting the key functionalities of the application. In the context of the furniture shopping app, the primary actors include the customer, admin, and system. Fig.3 shows the use case diagram between admin, customers, and handyman.

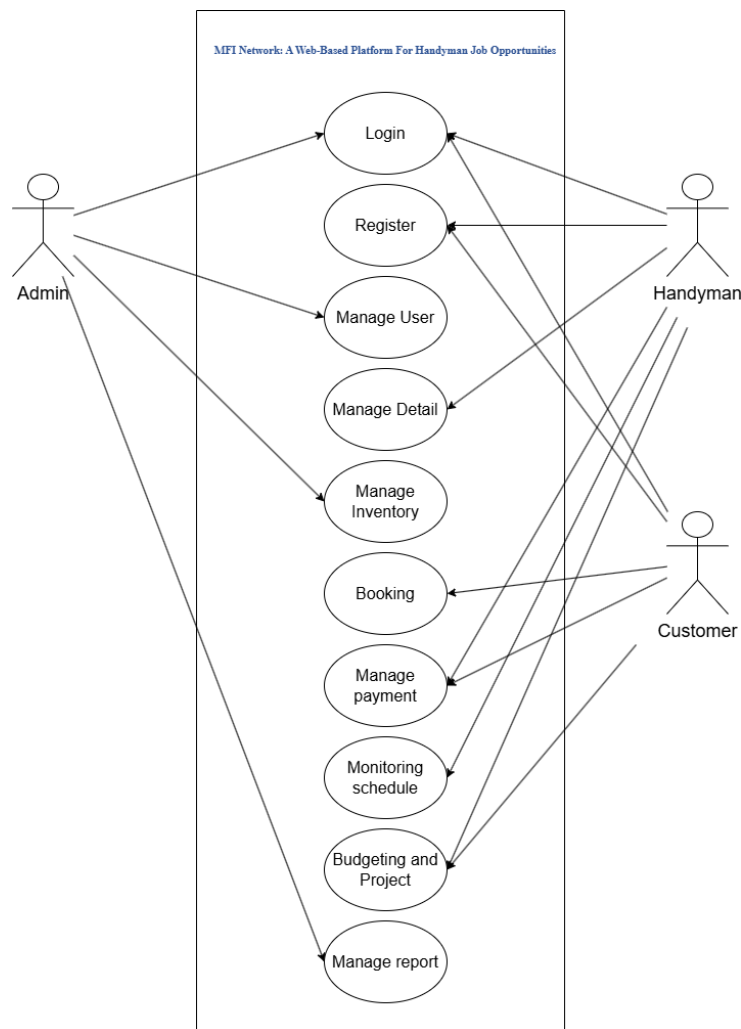


Fig. 3 Use Case Diagram of MFI Network

3.4.2 Class Diagram

The class diagram represents the static structure of the MFI Network system by illustrating its key classes, attributes, and relationships. The system consists of classes such as Booking, Project, Payment, Inventory, and Report. Each user role (Customer, Handyman, Admin) interacts with specific classes based on their privileges. For instance, Customers can create Bookings, submit Projects, and make Payments, while Handymen manage their published profiles and offer Project Offers. Admins have access to manage Inventory, Users, and system Reports. The class relationships define associations, dependencies, and multiplicity, ensuring proper data flow and object interaction throughout the system. Fig. 4 illustrates the complete class diagram of the MFI Network system.

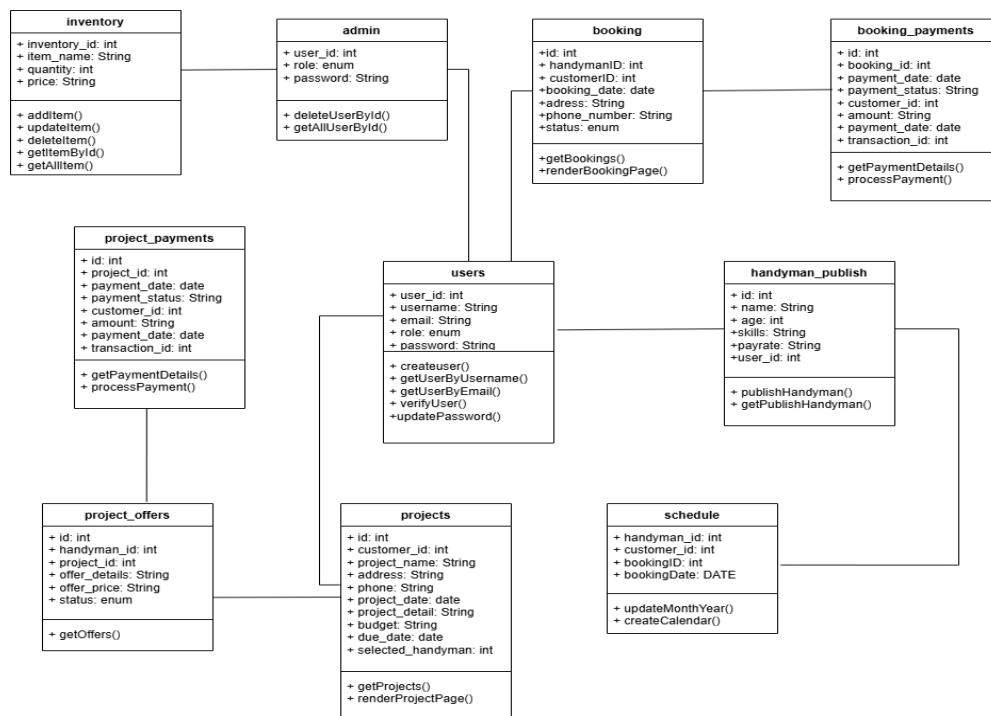


Fig. 4 System Architecture of MFI Network

4. Results and Discussion

In this section the implementation and testing phase of the developed MFI Network. The system was developed using the programming language PHP for the back-end with the support of VS Code as the software to help build the websites. PhpMyAdmin also has been used to perform manipulation for the database.

4.1 System Implementation

In this section, the implementation phase of the developed MFI Network system is detailed. The system was developed using PHP programming language for the back-end. PhpMyAdmin as the software to manipulate database. This combination enables cross-platform development and rapid deployment of the web-based system.

4.1.1 Login/Register Module

Fig. 5 (a) shows the code for implementing login for the user and Fig 5 (b) shows the code for user that want to register into ASE Furniture. The users would need to register a new account before they are able to continue using the system. The user would need to enter their username, role, email and set a new password. The interface will be produced as in Fig.5 (c).

```

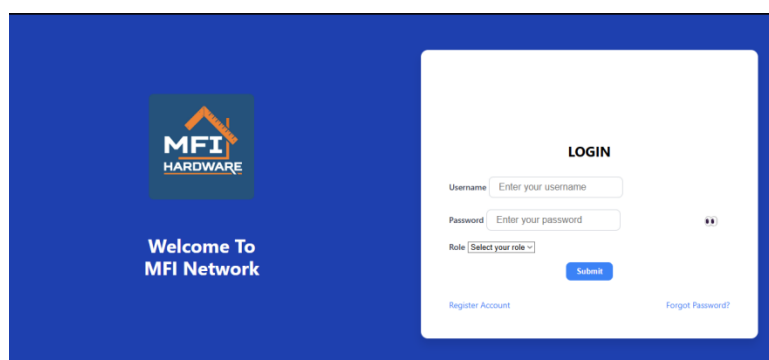
9  if ($_SERVER['REQUEST_METHOD'] == 'POST') {
10     $username = trim($_POST['username']) ?? '';
11     $password = $_POST['password'] ?? '';
12     $role = $_POST['role'] ?? '';
13
14     if (!$username) {
15         $errors[] = 'Username is required.';
16     }
17     if (!$password) {
18         $errors[] = 'Password is required.';
19     }
20     if (!$role) {
21         $errors[] = 'Role is required.';
22     }
23
24     if (empty($errors)) {
25         $conn = DatabaseConnection::getConnection();
26         $UserController = new UserController($conn);
  
```

(a)

```

9  if ($_SERVER['REQUEST_METHOD'] == 'POST') {
10     $role = $_POST['role'] ?? '';
11     $username = trim($_POST['username']) ?? '';
12     $email = trim($_POST['email']) ?? '';
13     $password = $_POST['password'] ?? '';
14
15     // basic validation
16     if (!$role) {
17         $errors[] = 'Role is required.';
18     }
19     if (!$username) {
20         $errors[] = 'Username is required.';
21     }
22     if (!$email || !filter_var($email, FILTER_VALIDATE_EMAIL)) {
23         $errors[] = 'Valid email is required.';
24     }
25     if (!$password || strlen($password) < 8) {
26         $errors[] = 'Password is required and must be at least 8 characters.';
27     }
28
29     if (empty($errors)) {
30         $conn = DatabaseConnection::getConnection();
31         $UserController = new UserController($conn);
  
```

(b)



(c)

Fig. 5 Implementation of Login Page (a)Code for Login Implementation;(b) Code for Register Implementation Login/Register Interface;(c) Login/Register Module Interface

4.1.2 Manage Profile Module

Fig.6 shows the Profile page for the customer who have successfully created an account and logged into the system. On this page, handyman can fill their personal information such as name, age, skills, and pay rate.

Fig.6 Customer Profile Page

4.1.3 Manage User Module

Fig.7 shows the manage user page for the admin. Admin can remove or delete the registered user from the database. Fig.7 demonstrates how admin can delete registered user from the database.

[← Back](#)

Manage Users

User ID	Username	Email	Role	Delete
1	admin1	admin1@gmail.com	admin	<button>Delete</button>
2	handyman1	handyman1@gmail.com	handyman	<button>Delete</button>
3	customer	customer1@gmail.com	customer	<button>Delete</button>
4	handyman2	handyman2@gmail.com	handyman	<button>Delete</button>
6	handyman3	handyman3@gmail.com	handyman	<button>Delete</button>

Fig. 7 Admin Manage User Page

4.1.4 Manage Inventory Module

Fig.8 (a),and (b) show the inventory management of the system, where admin can add update or delete item from inventory. This list will be displayed at the customer page at the quotation. admin can monitor currently available items for sale. They are able to add new item by specifying their name, price, and quantity. Additionally, admins have the ability to edit the item and delete existing items.

Manage Inventory

Add New Item

Existing Items

Item Name	Quantity	Price	Update	Delete
Pasir Halus /skop	1	20.00	Update	Delete
Pasir Kasar /skop	1	22.00	Update	Delete
Batu 3/4 /skop	1	30.00	Update	Delete
Simen	1	20.00	Update	Delete

Update Inventory Item

Item Name

Quantity

Price

(a)
(b)

Fig. 8 Manage Inventory (a)Manage Inventory Interface ;(b)update Inventory Detail

4.1.5 Booking Module

Fig.9 (a) and (b) shows the interfaces for customers who wish to make a booking for a handyman. When customer select on of the handyman they want, they need to fill the phone number, address, and date of the booking. Then handyman will approve or reject the customer booking. Customer can monitor the booking status at the booking status page.

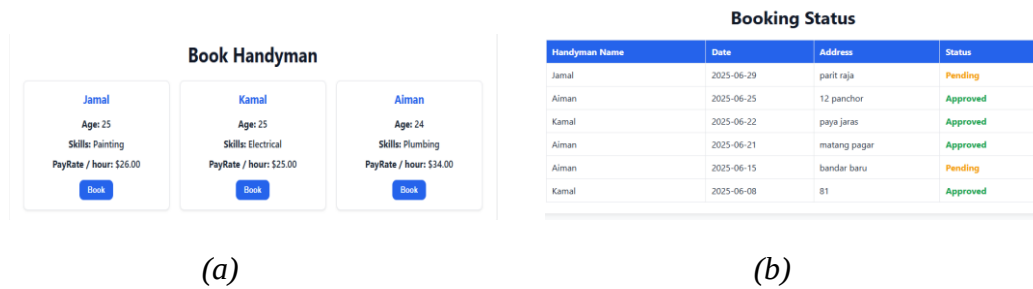


Fig. 9 Manage Booking (a)Customer Booking Page; (b)Customer Booking Status Page

In Fig.10, Then handyman will approve or reject the customer booking. Customer can monitor the booking status at the booking status page.

Date	Customer Name	Address	Phone Number	Status	Action
2025-06-25	customer	12 panchor	0134141214	Approved	N/A
2025-06-21	customer	matang pagar	0134141214	Approved	N/A
2025-06-15	customer	bandar baru	0134141214	Pending	Approve Reject

Fig. 10 Handyman Booking Approval Page

4.1.6 Monitoring Schedule Module

Fig.11 (a) shows the process when customers have approve the booking from the customer. Fig.11 (b) show the calendar automatically generate the marking date with green colour for the booked date.

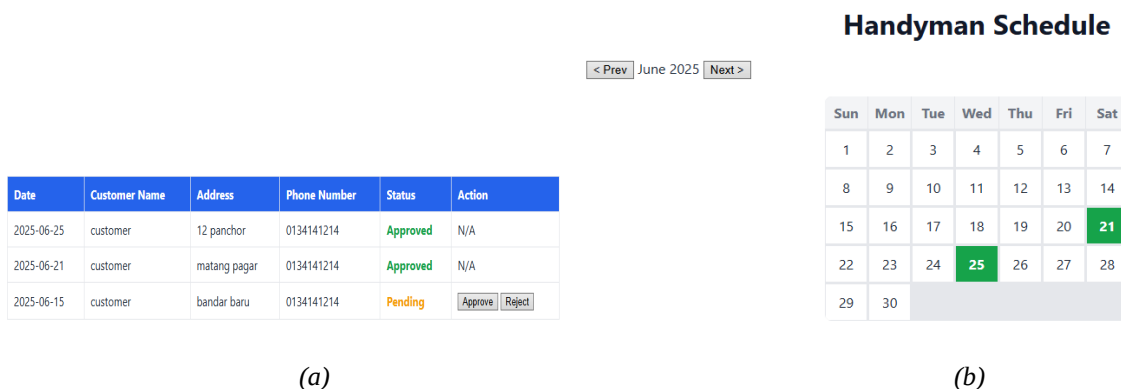


Fig. 11 Handyman Manage Booking (a)Handyman Booking Approval Page ; (b)Handyman Schedule

4.1.7 Budgeting and Project Module

Fig.12 (a) show the page that customer can calculate the total price for the selected item with the specific quantity they need, and (b) show the customer can publish project by filling the form like project name, address, date, details, budget, and due date for offer.

Quotation - Select Items

Item	Price (per unit)	Quantity	Subtotal
Batu 3/4 /skop	\$30.00	0	\$0.00
Pasir Halus /skop	\$20.00	0	\$0.00
Pasir Kasar /skop	\$22.00	0	\$0.00
Simen	\$20.00	0	\$0.00
Total Price: \$0.00			

Post a Project

Project Name:

Address:

Phone Number:

Project Date:

Project Details:

Budget:

Due Date for Offers:

Post Project

(a)

(b)

Fig. 12 Quotaion (a)Quotation Page; (b)Project Page.

Fig.13 (a) show the page that handyman can offer their price to the published project. They only have one attempt to suggest their offer. (b) is the page where handyman will select which offer that they will accept as selected handyman. After customer selected the offer, other offer will be classified as rejected.

Posted Projects

haha

Customer: customer

Address: haha

Phone: 4145153

Project Date: 2025-06-15

Budget: \$2025.00

Due Date for Offers: 0000-00-00

Offer Details:

Offer Price:

Send Offer

Your Posted Projects

Project Name	Address	Phone	Project Date	Budget	Due Date	Selected Handyman	Offers
t	t	t	2025-06-08	\$3515.00	2025-06-07	None	1 offer(s)
haha	haha	4145153	2025-06-15	\$2025.00	0000-00-00	None	No offer
try	asfafa	1423235	2025-06-27	\$21415.00	0000-00-00	Kamal	2 offer(s)
Pagar Dawai	11 panchor	131254161616	2025-06-29	\$134235.00	0000-00-00	None	No offer
Repairing Fence	sg buloh	0123456789	2025-06-30	\$7000.00	0000-00-00	None	No offer

(a)

(b)

Fig. 13 Projects for Handyman (a)Handyman Find Project Page; (b)Customer Posted Project Page

4.1.8 Payment Module

Fig.14 (a) show the page that customer can calculate the total price for the selected item with the specific quantity they need, and (b) show the customer can publish project by filling the form like project name, address, date, details, budget, and due date for offer.

Booking Payments

Booking Date	Handyman ID	Payment Status	Action
2025-06-25	Aiman	Pending	Pay
2025-06-08	Kamal	Completed	Paid

Complete Payment

Booking Date: 2025-06-25

Amount: 0.00

Payment Method:

Card Number: 1234 1234 1234 1234

Expiration (MM/YY): MM/YY

CVC: 123

Pay Now

Salary Payment Status

Project Payments

No project payments found.

Booking Payments

Booking Date	Amount	Payment Status	Payment Date
2025-06-25	\$1.00	Pending	

(a)

(b)

(c)

Fig. 14 Customer Payment (a)Customer Payment Page; (b)Payment Form Page; (c)Salary Page

4.1.1 Report Management

Fig.15 show the admin page for report. This module will show admin the report of booking, project, and payments. Admin can monitor each activity by accessing this page.

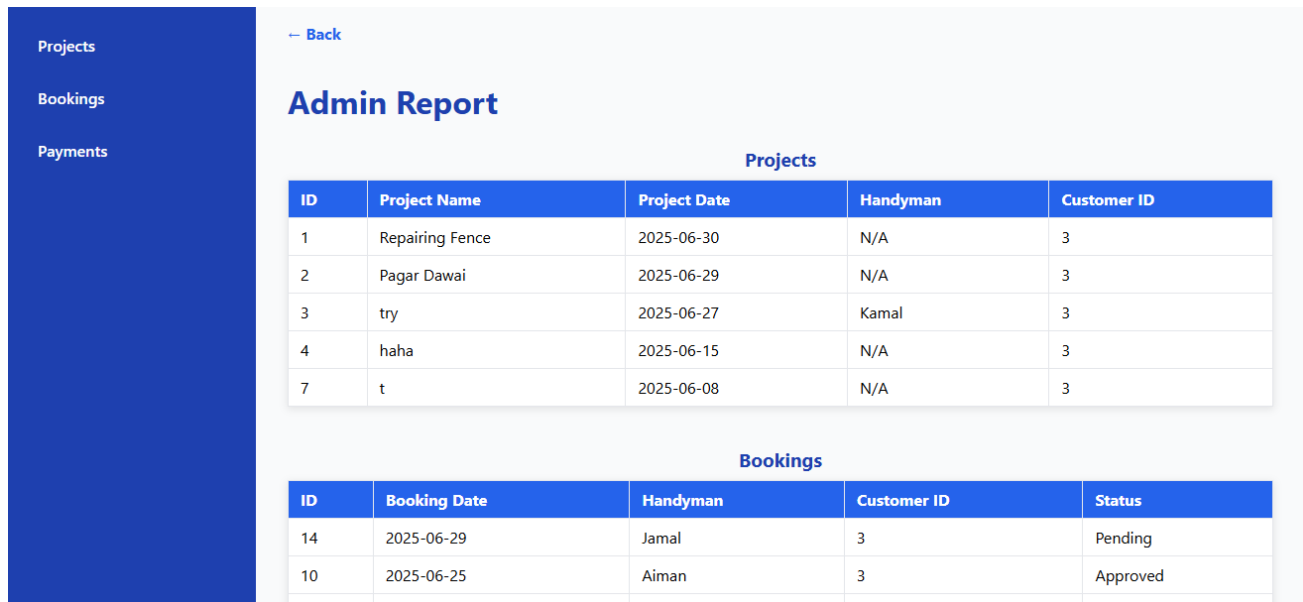


Fig. 15 Admin Report Page

4.2 System Testing (User Acceptance Test)

A user acceptance test (UAT) was conducted to ensure that the final system met users' expectations. The test involved 20 key stakeholders, including customers and handymen, to ensure that the feedback gathered was both relevant and actionable. The UAT results, shown in Figures 16 to 19, were presented as bar graphs and assessed on a 5-point Likert scale (1 = Poor, 5 = Excellent). For overall system usability (Figure 16), 80% of respondents rated the system as excellent (5), and 20% rated it as good (4), indicating a strong positive perception of the system's usability. Regarding the intuitiveness and ease of use of the interface (Figure 17), 85% rated it excellent, 10% rated it good, and 5% gave it an average rating (3), suggesting that while most users found the interface intuitive, there is slight room for simplification. In terms of navigation (Figure 18), 80% gave the highest rating, 10% rated it good, 5% rated it average, and another 5% rated it fair (2), indicating that a few users encountered challenges in navigating the system and may benefit from enhancements like tool tips or user on boarding features. Finally, the visual appeal of the system (Figure 19) received 70% excellent ratings, 25% good, and 5% fair, which suggests that although most users were satisfied with the design, there is an opportunity for visual refinement, possibly through improvements in layout, color scheme, or typography. Overall, the UAT results show that the system generally meets user expectations, with only minor areas identified for improvement.

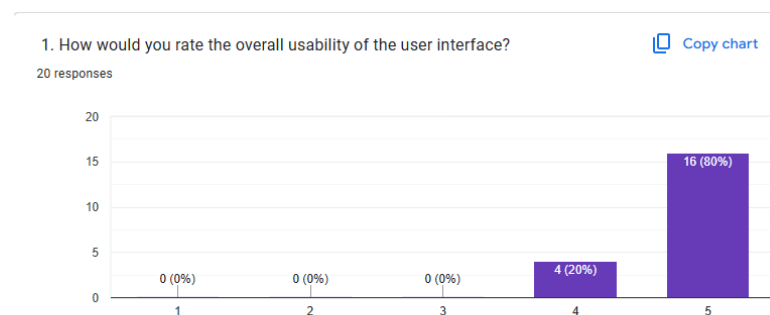


Fig. 16 System Usability Testing

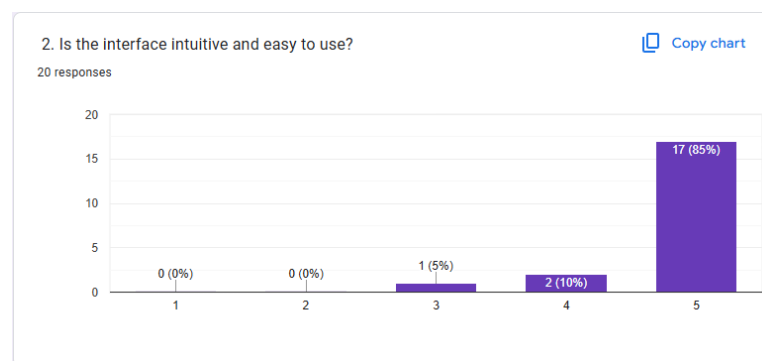


Fig. 17 *Interface Testing*

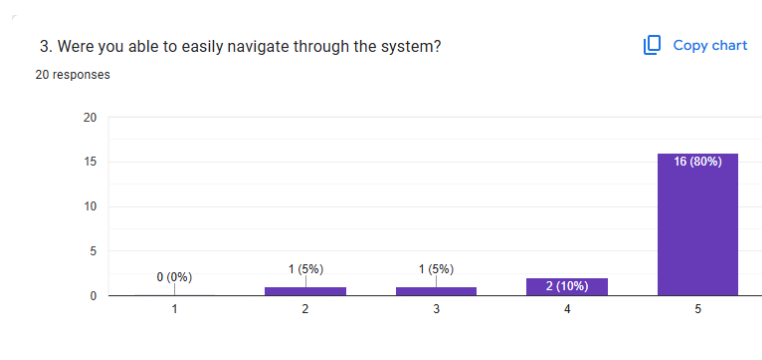


Fig. 18 *Navigation Testing*

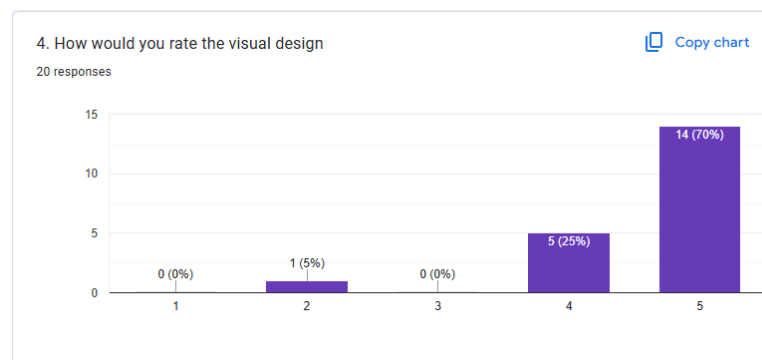


Fig. 19 *Design Testing*

5. Conclusion

In summary, the introduction of this digital platform represents a significant step forward for MFI Hardware in modernizing its operations and better serving the Kampung Melayu, Sungai Buloh community. By replacing outdated manual methods with an efficient, user-friendly system, the platform simplifies service registration, booking, and pricing for all users. This not only enhances operational efficiency and customer satisfaction but also elevates MFI Hardware's role as a community hub that supports local businesses and promotes economic growth. Through this initiative, MFI Hardware positions itself as a forward-thinking, community-driven enterprise ready to meet the evolving needs of its customers in the digital era.

Future improvements to the system may include enabling MFI Hardware to list and sell products directly through the platform, creating a new revenue stream. Additionally, a registration fee can be introduced for handymen to ensure commitment and maintain service quality. A rating and review feature for each registered handyman will also be implemented to help customers make informed decisions based on past performance and user feedback.

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Conflict of Interest

Authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: study conception and design: Ahmadur Rohm Norol Riskoh Bin Mokdin, Dr. Mohd Zanes Bin Sahid; data collection: Ahmadur Rohma Norol Riskoh Bin Mokdin; analysis and interpretation of results: Ahmadur Rohma Norol Riskoh Bin Mokdin, Dr. Mohd Zanes Bin Sahid; draft manuscript preparation: Ahmadur Rohma Norol Riskoh Bin Mokdin, Dr. Mohd Zanes Bin Sahid. All authors reviewed the results and approved the final version of the manuscript.

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Appendix A: UAT Form (Functionality Testing)

Name: MUHAMMAD FARHAN BIN IBRAHIM

Date: 11/6/2025

Company: MFI TOOLS HARDWARE TRAINING 2

Num.	Module	Test Result		Remark (if any)
		Pass	Fail	
1.	Login and Register			
	There is a login/register page in the system	/		
	Able to register a new account	/		
	Able to login with valid credentials	/		
	System show error message if login fails	/		
	Able to navigate to homepage after login	/		
2.	Manage User			
	There is a manage user page in the system	/		
	Able to remove the user	/		
3.	Manage Details			
	There is a manage detail page in the system	/		
	Handyman can fill their details	/		
	Handyman can publish their detail for booking	/		
4.	Manage Inventory			
	There is a manage inventory page in the system	/		
	Admin can add item	/		
	Admin can update item	/		
	Admin can delete item	/		
5.	Booking			
	There is a booking page in the system	/		

	Customer can book handyman	/		
	Customer can see the booking status	/		
6.	Monitoring Schedule			
	There is a schedule page in the system	/		
	Handyman can see the booking list	/		
	System can mark at the calendar for booked date	/		
7.	Manage Payment			
	There is a payment page in the system	/		
	Customer can pay the pending payment	/		
	Handyman can see the status of the payment	/		
8.	Budgeting and Project			
	There is a quotation page in the system	/		
	There is a project page in the system	/		
	Customer can publish project	/		
	Handyman can send offer	/		
	Customer can choose offer	/		
	Handyman can see the offer status	/		
9.	Manage Report			
	There is a report page in the system	/		
	Admin can see all the history of bookings, projects, and payments	/		

Agreed by:



Name: MUHAMMAD FARHAN BIN IBRAHIM

Date: 11/6/2025

