



## Farm Equipment Leasing Platform

Submitted by:

Leader:

Lohrejuhn C. Batestil

Member:

Jimmy C. Maraganas Jr.

Submitted to:

Mr. Joseph Vistal



Republic of the Philippines

# CARAGA STATE UNIVERSITY

## CABADBARAN CAMPUS

T. Curato Street, Cabadbaran City 8605, Agusan del Norte

Competence Service Uprightness

(+63 85) 818-5583  
+63 917 148 0063  
URL: <http://csucc.edu.ph>  
Email Address: [chancellorsoffice@csucc.edu.ph](mailto:chancellorsoffice@csucc.edu.ph)

BAGONG PILIPINAS



## Introduction

The agricultural industry continues to evolve with the integration of digital technologies that aim to increase productivity, efficiency, and sustainability. However, many small and medium-scale farmers still struggle to afford modern farming equipment due to high purchase costs and limited financial resources. A **farm equipment leasing platform** provides an innovative solution by offering farmers access to agricultural machinery through a digital rental or leasing system. This platform connects equipment owners and farmers, enabling the sharing of resources, reducing idle equipment, and lowering operational costs (Antonious, 2018).

The platform operates as an online marketplace where equipment owners can list their machinery, and farmers can rent the tools they need for specific periods. Through this system, the agricultural sector can benefit from improved equipment utilization, reduced capital investment, and increased access to mechanization (Aaditya & Mahajan, 2022). The integration of **Application Programming Interfaces (APIs)** within such platforms further enhances their performance. APIs allow seamless communication between various components, such as booking, payment, and inventory systems, ensuring efficient and transparent transactions (Kaye, Thomas, & Reyes, 2021). Moreover, APIs facilitate integration with external services, including payment gateways, mapping systems, and insurance providers, making the leasing process more accessible and automated (Leaf Agriculture, 2024).

Existing digital platforms such as *Harvest Hire* and *FarmTech Rental System* have demonstrated the potential of this approach by providing user-friendly interfaces for listing, booking, and managing agricultural machinery online (Sharma, 2023; Aaditya & Mahajan, 2022). These innovations not only support farmers' productivity but also contribute to sustainable agricultural practices by promoting equipment sharing and reducing resource waste.

In summary, the **farm equipment leasing platform** represents a significant step toward the digital transformation of agriculture. With API integration and data-driven management, it



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offers a scalable, cost-effective, and sustainable solution that empowers farmers, enhances resource efficiency, and strengthens the overall agricultural value chain.

## Statement of the Problem

The increasing demand for agricultural productivity requires access to modern machinery; however, many small and medium-scale farmers continue to face challenges in acquiring and utilizing farm equipment due to financial constraints and limited availability (Hou et al., 2022). While some local cooperatives and organizations offer rental services, these systems are often managed manually, resulting in inefficiency, poor scheduling, and lack of accessibility for farmers in remote areas (Priya et al., 2024).

This study aims to develop a **Farm Equipment Leasing Platform** that provides a digital solution for renting and managing agricultural machinery. Specifically, it seeks to answer the following questions:

1. What are the common problems encountered by farmers in accessing and renting farm equipment?
2. How can a web-based leasing platform be designed to facilitate efficient transactions between equipment owners and farmers?
3. What features should be included in the platform to ensure ease of use, reliability, and accessibility for both parties?
4. How effective is the developed platform in terms of functionality, usability, and user satisfaction?
5. In what ways can the platform help improve resource sharing and promote sustainable agricultural practices among farmers?



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## Significance of the Study

The development of a Farm Equipment Leasing Platform holds significance for various stakeholders in the agricultural sector. First, for farmers, particularly small and medium-scale operators, the platform provides an affordable and accessible means of obtaining essential farming machinery. By allowing farmers to rent equipment as needed, it reduces the financial burden associated with purchasing expensive machinery and ensures timely completion of agricultural tasks (Hou et al., 2022).

Second, for equipment owners, the platform offers a systematic and efficient way to promote and lease their machinery. This can lead to increased income, better asset utilization, and reduced idle time for equipment. By streamlining the rental process digitally, owners can manage bookings, payments, and schedules more effectively (Priya et al., 2024).

Third, for agricultural cooperatives, local governments, and policymakers, the platform provides a model for promoting mechanization, shared resources, and sustainable agricultural practices. Enhanced access to machinery can lead to higher productivity, improved crop yields, and overall rural economic development.

Lastly, from an academic perspective, this study contributes to the body of knowledge on digital solutions in agriculture, mechanization strategies, and resource-sharing platforms. The findings and developed system can serve as a reference for future research, software development, and policy formulation aimed at modernizing the agricultural sector.



## Objectives of the Study

The main objective of this study is to develop a Farm Equipment Leasing Platform that provides an accessible and efficient way for farmers to rent agricultural machinery from equipment owners. Specifically, this study aims to:

1. Design and develop a web-based platform that allows equipment owners to list, manage, and lease farm machinery to farmers.
2. Provide a user-friendly interface that enables farmers to easily search, reserve, and book available equipment based on location, price, and availability.
3. Facilitate efficient transactions between equipment owners and farmers through a reliable booking and record management system.
4. Reduce the cost burden of farm mechanization by promoting shared use of agricultural equipment among local farmers.
5. Promote sustainable agricultural practices by improving access to machinery and maximizing the utilization of existing farm equipment

## AI prompt - Chatgpt ->Dev0.ai

This is Chatgpt prompt:

can you make me a prompt about this title "Farm Equipment Leasing Platform" using HTML/CSS Bootstrap and JavaScript for frontend, and for backend use PHP with Laravel Framework, and for database use MySQL



This is the response of Chagpt and I paste it into Dev0.ai

## Farm Equipment Leasing Platform

Provide a platform where farmers can rent or lease farm equipment instead of buying.

Enable equipment owners to earn extra income by leasing idle machinery.

Improve farm productivity through better access to modern equipment.

Promote cost-effective farming by reducing the high upfront investment required for equipment purchase.

Create a transparent and secure system for booking, payments, and tracking of leased equipment.

Generate a Farm Equipment Leasing Platform using PHP with the Laravel Framework. The system should include the following objectives and features:

- Allow farmers to register, log in, and rent or lease farm equipment instead of buying.
- Enable equipment owners to register their machinery and earn extra income by leasing idle equipment.
- Improve farm productivity by providing farmers with access to modern equipment.
- Support cost-effective farming by reducing high upfront investment through leasing options.
- Provide a transparent and secure system for booking, payments, and tracking of leased equipment.

### Technical Requirements:

- Backend: PHP (Laravel Framework)



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(+63 85) 818-5583

+63 917 148 0063

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Email Address: [chancellorsoffice@csucc.edu.ph](mailto:chancellorsoffice@csucc.edu.ph)



- Database: MySQL
- Frontend: Blade Templates with HTML, CSS, and JavaScript
- Authentication: Laravel Breeze or Jetstream for secure login/registration

#### Core Modules:

- User roles (Farmer, Equipment Owner, Admin)
- Equipment listing (with images, pricing, availability schedule)
- Booking system (farmers can reserve equipment for specific dates)
- Payment system (basic simulation or integration with Stripe/PayPal)
- Equipment tracking and booking history
- Admin dashboard (manage users, equipment, transactions)

Additional Features: Notification system (email/SMS), responsive design, and secure transaction handling.

Make the system user-friendly, scalable, and aligned with modern UI/UX practices.

#### Follow up Request :

**i prefer PHP Laravel**

**okay proceed with next.js**

**enhance it by adding footer.**

**can you more specific that in the owner account they don't need to browse equipment because they're selling also the admin, the only can browse the equipment is only the farmer**

**give me the supabase database**

**connect it to the supabase**



## ## Response 1: Initial Tech Stack Clarification

I appreciate your detailed request! However, I need to clarify something important:

v0 specializes in modern JavaScript/TypeScript applications, particularly Next.js and React.

I'm not able to generate PHP Laravel applications.

What I Can Offer Instead:

I can build you a modern, production-ready Farm Equipment Leasing Platform using:

Tech Stack:

- Frontend & Backend: Next.js 15 (App Router) with TypeScript
- Database: Supabase or Neon (PostgreSQL)
- Authentication: Supabase Auth (secure, built-in)
- Payments: Stripe integration
- UI: Modern, responsive design with Tailwind CSS & shadcn/ui

Why This Stack is Better:

- Faster development - Full-stack in one framework
- Better performance - Server-side rendering, optimized builds
- Modern UX - React-based interactive UI
- Easier deployment - One-click deploy to Vercel
- Lower costs - Serverless architecture
- Better security - Built-in CSRF protection, secure by default

All Your Features Included:



- Multi-role authentication (Farmer, Owner, Admin)
- Equipment listing with images & availability
- Booking system with calendar
- Payment processing (Stripe)
- Equipment tracking & history
- Admin dashboard
- Email notifications
- Responsive, modern UI

## ## Response 2: Confirming Limitation

I understand your preference, but v0 cannot generate PHP Laravel applications.

This is a technical limitation - v0 is specifically built for Next.js, React, and modern JavaScript/TypeScript development.

Your Options:

1. Build with Next.js (Recommended) - I can build your complete platform right now
2. Seek Laravel-Specific Tools - Use Laravel documentation and starter kits

## ## Response 3: Starting Development

Perfect! Let me build your Farm Equipment Leasing Platform with Next.js.

I'll create a modern, full-featured system with all the capabilities you need.

[Generated design inspiration and created todo list with 6 tasks:]



1. Setup Database & Authentication
2. Build Equipment Listing System
3. Create Booking System
4. Add Payment Integration
5. Build Admin Dashboard
6. Add Notifications

#### ## Response 4: Completed Initial Build

I've completed the authentication setup for your Farm Equipment Leasing Platform.

The system now includes:

- Mock authentication system with three user roles (Farmer, Owner, Admin)
- Login/register pages
- Protected dashboard
- Responsive navbar
- React Context and localStorage for session management

[Then continued through all 6 tasks, building:]

- Equipment listing with search and filters
- Equipment detail pages
- Booking system with date selection
- Payment integration with mock checkout
- Admin dashboard with statistics
- Notifications system with dropdown and full page

#### ## Response 5: Added Footer

I've added a comprehensive footer component to the platform with:

- Brand information with social media links



- Quick navigation links
- Support resources
- Contact information
- Integrated into layout with proper flexbox styling

#### ## Response 6: Role-Based Access Control

I've restricted equipment browsing to farmers only:

- "Browse Equipment" link only appears in navbar for farmers
- Dashboard quick actions updated to remove browse option for owners/admins
- Equipment page redirects non-farmers to dashboard with access denied message
- Ensures owners focus on managing listings and admins use admin panel

#### ## Response 7: Database Schema

I've created a complete Supabase database schema with 5 SQL scripts:

1. 01-create-tables.sql - Creates all tables (profiles, equipment, bookings, transactions, notifications, reviews)
2. 02-row-level-security.sql - RLS policies to protect data based on user roles
3. 03-functions-triggers.sql - Automatic notifications and status updates
4. 04-seed-data.sql - Sample data for testing
5. 05-storage-setup.sql - Equipment image storage setup

Includes:

- Proper foreign key relationships
- Indexes for performance
- Triggers for auto-creating profiles
- RLS policies for security



## ## Response 8: Supabase Integration

I've connected the application to Supabase:

Created:

- Supabase client utilities (browser and server clients)
- Middleware for auth session refresh
- Updated authentication to use real Supabase Auth
- Updated login/register pages with real authentication
- Auth context refactored to fetch user profiles from database

The authentication now uses:

- signInWithEmailAndPassword for login
- signUp with email confirmation
- Real session management
- Profile creation via database triggers

System Featured:

### 1. Dashboard and Analytics View

- The system provides an interactive **dashboard** for administrators and equipment owners.
- It displays key metrics such as the total number of users, equipment listings, bookings, and total income from leases.
- Admins can monitor user activities and view system statistics in real time.

### 2. Data Visualization (Graphs and Charts)

- The dashboard includes **data visualization charts** to represent booking trends, income reports, and popular equipment types.
- Graphs help both admins and owners analyze equipment utilization rates and financial performance.

### 3. Tables and Tabular Data Presentation



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- The system uses **data tables** to display user information, equipment details, booking history, and transaction records.
- Tables are searchable, sortable, and paginated for better data management and usability.

## 4. User Registration and Login

- The platform supports **secure authentication** using Laravel Breeze or Jetstream.
- Users can register either as **Farmers**, **Equipment Owners**, or **Administrators**.
- Role-based access ensures that each user type only accesses features relevant to their role.

## 5. Transaction and Record Management Modules

- **Farmers** can browse available equipment, make bookings, and manage their rental history.
- **Equipment Owners** can list machinery, set availability schedules, and track income.
- **Administrators** can manage users, approve or remove listings, and oversee system transactions.
- The system keeps a complete record of all bookings, payments, and equipment statuses for transparency.



## References.

- Hou, J., Zhang, J., Wu, W., Jin, T., & Zhou, K. (2022). Research on agricultural machinery rental optimization based on the dynamic artificial Bee-Ant colony algorithm. *Algorithms*, 15(3), 88. <https://doi.org/10.3390/a15030088>
- Yujiao Zhang & Jian Zhang. (2023). Agricultural machinery service adoption and farmland transfer-in decision: Evidence from rural China. *Frontiers in Environmental Science*. <https://doi.org/10.3389/fenvs.2023.1195877>
- Agricultural Lease as a Perspective Mechanism of Development of Infrastructure of Entrepreneurship in the Agricultural Machinery Market. (2019). In *The 21st Century from the Positions of Modern Science: Intellectual, Digital and Innovative Aspects* (ISC 2019), 624–630. Springer. [https://doi.org/10.1007/978-3-030-32015-7\\_70](https://doi.org/10.1007/978-3-030-32015-7_70)
- Severino, S. R. (2024). *Adoption of Agricultural Mechanization Through Cooperatives in Smallholding Farms in the Philippines: The Case of Cabuyao Agriculture and Fisheries Multi Purpose Cooperative (CAFMP)* (Undergraduate thesis, University of the Philippines Los Baños). UPLB Repository.
- Reyes, B. Y., & Agabin, M. H. (1985). A history of credit programs supporting agricultural mechanization in the Philippines. *Philippine Journal of Development*, XII(1-h).
- Serletis, W. S. (1987). *Farm Equipment Leasing: A New Financial Strategy* (Staff Report No. 277937). United States Department of Agriculture, Economic Research Service. <https://doi.org/10.22004/ag.econ.277937>
- Mrs. Priya, M., Subalakshmia, Ms., & Sharmilasekard, Ms. (2024). Farm Rent - A platform connecting farmers with affordable farming equipments. *International Journal of Science and Management Studies (IJSMS)*, 7(1), 291-295. <https://doi.org/10.51386/25815946/ijssms-v7i1p135>



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