E Agro Cart: Agriculture Equipment Rental System

Prof. Gage Pallavi Kondibhau[1], Ashvini Sandesh Shinde[2],
Payal Dilip Padekar[2], Sanchita Sanjay Patade[2]
Assistant Professor, Department of Computer Engineering[1]
Students, Department of Computer Engineering[2]
Samarth College of Engineering and Management, Belhe Bangarwadi, Junnar, Pune, India

Abstract: *Agriculture is a labor-intensive sector, requiring a lot of machinery for agriculture. In comparison to workers, these machines are able to finish tasks in agriculture considerably sooner. The machinery used for farming or other agricultural purposes are referred to as "farm equipments." The various types of machinery used in agriculture include tractors, harvesting tools, mower conditioners, tillage tools, and other farming equipment. However, these machinery and gear are frequently very pricey, and every farmer cannot afford to buy them. The high price of purchasing new farm equipment and its corresponding high costs of upkeep increase the demand for farm rental services. This website provides a system for renting agricultural machines and vehicles called E-Agro Cart that allows farmers to get the latest data for farming and farm machinery such as tractors, tillers, rotavators, etc. Farmers can rent farming equipment and machinery through this website and perform all tasks related to farming while sitting at home. Farmers use rental services to earn some profit by balancing the costs of keeping their farm equipments. In order to avoid paying an immense amount of capital as a down payment on essential farm equipment, leasing out machinery for agriculture helps farmers to harvest their crop on time. Also, the agricultural operation is not profitable, farmers might find it hard to afford getting heaviest farm equipment. In spite of improving the efficiency of the agricultural machinery that is already accessible, this approach will help individual farmers who are willing to rent out their equipment and machinery for farming to improve their agricultural income. This system will offer farmers an area to buy and rent used agricultural machinery.*

Keywords: Farmer Equipment on rent system, e-agro cart application, online equipment hire.

I. INTRODUCTION

E-Agro Cart (e-commerce website for selling Agricultural items and renting the agricultural tools) is a site which helps ranchers in buying items like seed, pesticide, fertilizers and it also has agriculture tools where ranchers can take the agriculture tools for sell. The E-Agro Cart System is a software solution designed to manage the operations of an agricultural retail store, serving as a platform for shop owners, sellers, buyers, and administrators. The system offers a variety of features to streamline store management, such as inventory tracking, sales processing, and customer relationship management. Shop owners can manage product catalogues and receive orders from buyers, while sellers can add products to the store and manage their inventory. Buyers can browse the product catalogue and place orders, while administrators oversee the entire system, managing user accounts and setting up promotions and discounts. The system improves the efficiency of day-to-day store operations, reducing costs and enhancing the overall customer experience for both buyers and sellers. With real-time inventory tracking, the Agriculture shop Management System helps shop owners optimize their stock levels and make informed purchasing decisions. Overall, the system provides an efficient and effective platform for agricultural retail management, benefiting all parties involved.

II. LITERATURE REVIEW

Title- Agricultural Marketing and Management System For Rural It defines agro-marketing and strategic vison effectiveness can be achieved with electronic commerce related process. It helps the wholesalers and retailers in buying

product from larger number of farmers. It helps farmers to keep track of their production with features such as virtual calendar, forecasting. It features online shopping of fertilizers, pesticides, etc.

Title- Agri Shop In overall it defines idea of the Agri Shop to minimize the effort which is invested in to field of agriculture and makes the process easier and efficient by providing facilities. The application is allowing farmers to rent tools which are required for farming rather than purchasing themselves. It provides knowledge about the various schemes which is introduced for the betterment of farmers by our government.

Title- Design and Implementation of an Agrishop Management System" This research paper describes the design and implementation of an agrishop management system using Java technology. The system includes features such as inventory management, sales tracking, and customer relationship management.

Title- Development of an Agrishop Management System using Visual Basic.NET This research paper describes the development of an agrishop management system using Visual Basic.NET. The system includes features such as inventory management, sales tracking, and customer relationship management.

III. PROBLEM DEFINATION

The agriculture industry is heavily reliant on machinery for efficient and effective production .Farmers often require specialized agricultural machinery for specific tasks such as planting, tilling, harvesting, and spraying. However, the cost of purchasing and maintaining these machines can be prohibitive for many farmers, particularly those with small to medium-sized farms. Additionally, the high capital investment required for purchasing these machines may not be justified for farmers who need them only occasionally. As a result, farmers may resort to manual labour or outdated machinery, which can negatively impact their productivity and profitability. Moreover, farmers who own agricultural machinery often face underutilization of the equipment and may struggle to generate enough revenue to cover their investment. Additionally, maintaining and repairing the machinery can be costly, especially for farmers who do not have the technical knowledge or expertise to do it themselves. Another problem is the lack of access to modern and specialized machinery in some regions. In many developing countries, farmers may not have access to the latest agricultural machinery and may have to rely on outdated equipment, which can negatively impact their productivity and yield. Additionally, some farmers may not be able to afford to purchase specialized machinery that is designed for specific crops or tasks, limiting their ability to improve their productivity. A third problem is the limited availability of spare parts and technical support. In some regions, it can be challenging to find spare parts for agricultural machinery, which can lead to extended downtime and reduced productivity. Lastly, there is a problem of underutilization of agricultural machinery. Some farmers may not use their machinery to its full potential, leading to inefficient use of resources and reduced profitability. To address this problem, AgroEcom an web-based agriculture machinery rental system can be developed to connect farmers with individuals who own agricultural machinery.

IV. SYSTEM ARCHITECTURE

Interfaces:
There is a single type of interface as such supported by our system namely

User Interfaces:
The product will exist on a real-life system. The Interface will be a simple and easy to use interface. The user needs to give input of the attendance which they are looking for after that the report will be predicted according to the input entered the result box will display the result of the fired query.

Hardware Interfaces:
The system has minimal Hardware interfaces. A normal android phone, personal desktop or a laptop will be a good choice to run the system. It is recommended for the system to have higher ram and processing power in order to compute and predict quickly.

Software Interfaces:
To apply for this system there is need to Android Studio, XAMPP, MySQL, Browser, Editor etc.
The online database plays an important role in the system as without it, the user authentication will fail along with the data extraction process. The database is composed of a number of tables, which are used to store different groups of records required to managed the student attendance data. Basically there are four relational tables specifically named as;

'groups', 'lecturer', 'courses' and 'students'. The 'lecturer' table stores the staff's information such as the staff username, password and name, while 'courses' table stores the details of available courses. As shown in Figure 2, the primary key of 'courses' and 'lecturer' table are inserted into 'groups' table as foreign key. The same goes for 'students' table, the foreign key refers to the id from 'groups'. Figure 2. Table's relation diagram The online web server can be deployed on a computer, which is connected to the Internet.
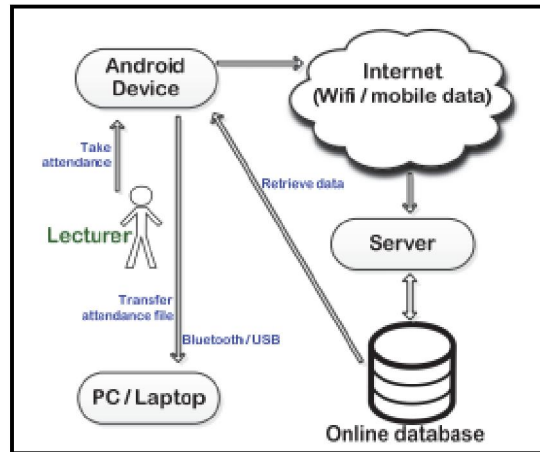
Proposed System

Proposed E-Agro Cart a Web based Agricultural Machinery Rental System would be an online platform that connects farmers with rental companies or individual owners offering agricultural machinery for rent. The system would offer a range of equipment, including tractors, tillage equipment, harvesting equipment, and other specialized machinery. The proposed system would have the following features:

• Equipment Listings: Rental companies or individual owners would be able to list their equipment available for rent on the platform, including information about the equipment, such as model, make, availability, rental rate, and location.

• Equipment Search: Farmers would be able to search for equipment based on location, type of equipment, rental rate, and availability.

• Online Booking: Farmers would be able to book equipment online and make payment through the platform.

• Ratings and Reviews: Farmers would be able to rate and review the equipment and the rental companies, providing feedback that can be used to improve the quality of service provided. The proposed Web based Agricultural Machinery Rental System would provide farmers with access to a wide range of equipment at competitive prices, increasing their efficiency and productivity while reducing their costs. Rental companies or individual owners would benefit from increased exposure and a wider customer base, helping to expand their businesses. Overall, this proposed system would offer a convenient and efficient solution for farmers to rent agricultural machinery.

V. RESULT AND DISCUSSION

E-Agro Cart Rental Web UI Web based system to maintain the efficient operation and management of agriculture equipment's transparently. Users (farmers) may search the database of rental machinery and reserve them. A data base management system was made used for higher system compatibility and integrated work. The entire development process has been subdivided into two: the front-end development and the backend development. The front end comprises of the visually visible parts such as the home page, admin panel, contact page, about us page, vender and renter panel [6]. The back end contains the database and its interaction with the front-end.

E-Agro Cart End User Module

E-Agro Cart Admin:

- **User management:** Allows the admin to manage user accounts, including creating, editing, and deleting accounts. International Journal of Research Publication and Reviews, Vol 4, no 6, pp 3679-3684 June 2023 3681Equipment management: Enables the admin to add, update, and remove equipment listings in the system.

- **Rental management**: Provides tools to handle rental requests, approve or decline rentals, and track rental activities. Maintenance management: Allows the admin to manage equipment maintenance requests and track maintenance activities.
- **Financial management**: Provides features to track rental payments, generate financial reports, and manage transactions.
- **Analytics and reporting**: Generates reports and provides insights on rental activities, revenue, equipment utilization, and user feedback.
- **User support**: Handles user inquiries, troubleshoots issues, and provides customer support.

Agri Machinery Vendor

In this sub-module the vender information is processed. This information includes giving username and password to login to this site. This is required to verify the user. The contact number of the vendor is used to confirm the vender's registered equipment and also to send promotional number. Vendor can also see their registered equipment when they login on their account using their user id and password.

- **Equipment listing**: Allows vendors to add and manage their equipment listings, including details such as type, make, model, rental cost, and availability dates.
- **Availability management**: Enables vendors to update the availability status of their equipment based on rental bookings and maintenance schedules.
- **Rental request handling**: Provides tools for vendors to review and approve rental requests received from renters.
- **Maintenance request handling**: Allows vendors to respond to equipment maintenance requests and coordinate maintenance activities.
- **Payment tracking**: Enables vendors to track rental payments received for their equipment.

Machinery Module:

In this module Equipment details can be added to the database. The late charges and actual price of the equipment can be added. The equipment details can be edited. The equipment is stored as per category. Arrangement of equipment into categories enables the user to search the Equipment based on its category. The database is normalized so that the redundancy is minimized.

Machinery Booking:

This sub-module lets the farmer to select the items that they intend to take on rent to store in cart before placing the order. The items can be stored into the cart and it can be deleted from the cart. The booking module is responsible for things such as the renting of agricultural machinery for sale. The user would have to enter the number of hours, pick the date and time, to hire a tractor or equipment. Upon entering these information, users will have to confirm their reservation. Then the customer will get the total price of the equipment for agriculture. If the owner can authorize the request, the user can send text MSG to the owner, then he can send text MSG with notification. The booking will then be successfully confirmed. After active booking, both users view the history and contact information of each other.

Order:

In this sub-module farmer order is processed. The user can place the order for the equipment they want to take on rent. It verifies the pin code and it confirms the order to delivered place. At the given address the equipment should be delivered.

Payment:

In this module payment options for the order is given and processed. Payment would be through credit card, debit card or cash on delivery. The total charges of the equipment are the sum of cost of the product and delivery charges will be deducted from the user's account in case of payment options other than cash on delivery.

Notification

The Notification Module for a Web based Agricultural Machinery Rental System is an important feature that keeps users informed about their rental orders and updates related to the rental process [10]. The Notification Module includes several features that help users stay updated on their rental orders, including

Order Confirmation:

After a farmer has placed an order for equipment rental, the Notification Module sends an order confirmation notification to the farmer. This notification includes details about the rental order, such as equipment type, rental period, and rental rate

Equipment Pickup/Delivery:

When the equipment is ready for pickup or delivery, the Notification Module sends a notification to the farmer to inform them of the pickup/delivery date and time. This allows the farmer to plan their schedule accordingly. Thus, the Notification Module is an essential feature of a Web based Agricultural Machinery Rental System as it keeps users informed about their rental orders and updates related to the rental process, which improves the user experience and helps ensure successful rental transactions.

VI. FUTURE ENHANCEMENT

We can open offices in every village, executive in that office can help farmers in using this application who does not the basic knowledge which is required to use application. It can be made to a mobile app so that every can able to use this application with minimum • requirements. • Another module can attached to the application where farmers can do sell their products through the application. So that he will get the correct price and end users can get good quality product when compared to the present system. • There should be a option of using the application in various native languages. • Interface can be made much more user friendlier. • No of products on application can be increased so that it will match each and every requirement of agriculture. • One more module can be attached which includes present market rates for the products • It can provide different payment options. • Performance of the application can be made much better in terms of loading time. • It could be developed in other programming languages like java so that the application could be platform independent. • Application can be uploaded to the server so that customers can access it remotely.

VII. CONCLUSION

Agri Shop is an e-commerce site created to support the ranchers and future individuals who are keen on cultivating, in present time there is a huge decline in cultivating and food creation which prompts food emergency, Agriculture is one of the mail pillar for all the nations on this earth. Agri Shop fills in as a rancher inviting site which gets well known and for the most part utilized when individuals think about the estimation of food and horticulture gets mainstream. Agri Shop facilitates the client who knows nothing regarding farming, development, agricultural products. In this application client will receive point by point data related to the item that is utilized in cultivating to get great yield. As referenced before this site as rancher cordial, it includes the office of leasing the farming hardware for development of yields, the gear like harvester, tiller, bug sprayer and so forth it could be leased in an hourly way. In the event that a client is new to cultivating he will get total method for utilizing the gear and why, when and how the hardware to be utilized to get a decent yield. Agri Shop is not only e-commerce site but also it is like a web page which gives the data of the government plans and facilities from both the legislature and private manages an account with low financing costs, Agri Shop assumes significant job in teaching the both urban and provincial side ranchers

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