Krishi Yug

A Minor Project Synopsis Submitted to

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Under the Supervision of
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1. Abstract:

Agriculture forms the backbone of the Indian economy and there is always a need to support and improve this domain, which includes some Indian NGOs with an initiative to support farmers by facilitating modern agricultural machinery on a rental basis along with rental storage facilities. Modern agricultural technology allows farmers to work more efficiently and easily it includes some organizations that are set up to help farmers who need such equipment, where the organization owns the equipment and rents it at the request of farmers for mandatory amounts. Currently, farmers have to travel to the site to borrow all the essentials, which is tedious and cost-inefficient work. Thus, Smart Digital Farming is listed as the top-rated technology opportunity in the latest Global Opportunity expected positive impact on society.

Postharvest losses account for about 10 per cent of the total food grains due to unscientific storage, insects, rodents, microorganisms etc. After reviewing academic and technical literature it was found that traditional approaches are also significantly important for grain storage in India. According to this study, farmers in India are also adopting modern technologies like hermetic storage and automated metal bins.

This document is about digitizing the process of renting agricultural equipment to farmers and providing them with an efficient crop storage system. Our goal is the development of a website that farmers can use to get their rental equipment and also check availability and rental storage centers. We also enable them to reserve the equipment in advance. It also helps us to get an overview of the equipment that is being rented.

2. Introduction of the Project:

Modern agricultural equipments make farmers work more efficient and easy. As a part of which there are some organizations that are set up to help those farmers who are in need of such equipment, where the organization owns the equipment's and rent those on request of farmers at liable amounts.

Rental equipment is a cost-effective solution for farmers who need access to specialized equipment for a short period of time. By renting instead of buying, farmers can avoid the large upfront costs, maintenance and storage expenses associated with owning equipment. A wide range of equipment is available for rent, including tractors, plows, cultivators, harvest equipment, and more. Rental equipment also allows farmers to test out new equipment before committing to a purchase. This allows farmers to make informed decisions and choose the equipment that best fits their needs.

Rental storage facilities are an ideal solution for farmers who need extra storage space for their equipment, crops, or other farming supplies. These facilities provide a secure, convenient, and cost-effective way for farmers to store their items, whether for short- or long-term periods. Some rental storage facilities are equipped with temperature-controlled units for sensitive items like seeds or produce, and many also offer 24/7 access for added convenience. Renting storage space also eliminates the need for farmers to invest in expensive storage structures on their

own property. With rental storage facilities, farmers can free up valuable space on their farms and keep their items safe and organized.
Conservation of biodiversity in terms of grain storage nowadays is essential due to cultural heritage and health of the state. This paper draws the attention towards the re-evaluation of traditional grain storage structures in terms of biodiversity and its allied branch of knowledge. In India as identified by Dejene et al (2004), pre-storage loss during drying and cleaning was higher than the loss during the storage. Average storage cost per quintal per year is maximum among the gunny bags lined with polythene sheet and minimum in case of underground storage.

3. Objective:

The objective of rental equipment for farmers is to provide farmers with access to specialized equipment they need, when they need it, without the financial burden of owning it. This allows farmers to save money, increase efficiency, and improve their overall farming operations. Additionally, rental equipment helps farmers stay competitive by allowing them to test out new technology and equipment before committing to a purchase, and it offers a flexible solution for those who may have seasonal or irregular equipment needs. The overall goal is to help farmers achieve their farming objectives while reducing costs and increasing profitability.
Grain storage loss is a major contributor to post-harvest losses and is one of the main causes of food insecurity for smallholder farmers in developing countries. Thus, the objective of this review is to assess the conventional and emerging grain storage practices for smallholder farmers in developing countries and highlight their most promising features and drawbacks. Different chemicals are also mixed with grain to improve grain storability.
Hermetic storage systems are effective alternatives for grain storage as they have minimal storage losses without using any chemicals. However, hermetic bags are prone to damage and hermetic metal silos are cost-prohibitive to most smallholder farmers in developing countries. Thus, an ideal grain storage system for smallholder farmers should be hermetically sealable, mechanically durable, and cost-effective compared to the conventional storage options.
The objectives of this document are:

- Our goal is to develop a Website that farmers can use to avail rental equipments and also check availability of storage centers for crops.
- It reduces the cost of visiting hubs to check availability storage centers and rental equipment.
- We also allow them to book equipment and storage centers in advance.
- It also helps us to get an overview of the equipment that is rented.
- We also aim to ensure better equipment availability and equipment health monitoring which could also help in providing better support to farmers 24X7.

4. Scope:

The aim of the project is to book agricultural equipment rental online and rental storage centers using a website. Farm equipment rental online administrative framework is created to guarantee productive tasks and straightforward administration of a government-backed farm hardware rental business. It reduces manual work, reduces paperwork, thereby supporting a sustainable environment. It also saves time. In addition, proper documentation of the entire project is also provided so that everyone can understand the project.
This web-based agricultural equipment and storage rental system is very user-friendly. This website contains complete and up-to-date device and storage information. Users can access the website by entering their username and password. Users can access this website at any time. We primarily design this website for disadvantaged farmers. As a result, they cannot purchase all types of devices and some of them even don't have an efficient storage facility for harvest. As a result, we strive to provide efficient rental equipment and storage services.

The scope of rental equipment for farmers covers a wide range of specialized farming equipment. Some examples include:

- Tractors and attachments (plows, cultivators, harvesters, etc.)
- Irrigation equipment (pumps, hoses, sprinklers)
- Harvesting equipment (combines, threshers, grain carts)
- Planting equipment (seed drills, planters)
- Livestock equipment (feeders, fencing, barn cleaning equipment)

In addition to these examples, rental equipment for farmers can also include various types of specialized equipment, depending on the needs of the individual farmer. The scope of the rental equipment is meant to provide farmers with access to the equipment they need to efficiently and effectively carry out their farming operations.

The scope of rental storage facilities for farmers covers a range of storage solutions designed to meet the specific needs of farmers. Some of the features offered by these facilities may include:

- Climate-controlled units for sensitive items like seeds, produce, and equipment
- Large units for large equipment and machinery
- Outdoor storage for vehicles, trailers, and other large items
- Secure storage with gated access and security systems
- Convenient 24/7 access
- Ample space for organizing and storing crops, feed, and other supplies

The scope of rental storage facilities is meant to provide farmers with a flexible and cost-effective solution for their storage needs, allowing them to free up valuable space on their farms and keep their items safe and organized.

5. Study of Existing Systems:

The existing system for rental equipment for farmers typically involves a network of rental equipment companies and dealers who offer a variety of farming equipment for rent. Some key elements of the existing system include:

- Equipment inventory: Rental companies maintain a wide range of farming equipment, including tractors, planting equipment, harvesting equipment, and livestock equipment, among others.
- Rental agreements: Rental companies typically have clear and concise rental agreements, which outline the terms of the rental, including the rental period, rental fee, and any restrictions or limitations on equipment use.
- Delivery and pickup: Rental companies typically offer delivery and pickup services for rented equipment, making it easy for farmers to obtain the equipment they need.
- Maintenance and repair: Rental companies typically handle all necessary maintenance and repair work for the equipment they rent out, ensuring that it is in good working condition at all times.
- Insurance: Rental companies typically provide insurance for the equipment they rent out, providing farmers with peace of mind in the event of any damage or loss.
- Customer support: Rental companies typically have customer support teams available to answer any questions or concerns that farmers may have during the rental period.

The existing system for rental storage facilities for farmers typically involves a network of storage facilities operators and real estate companies who offer a variety of storage options for farmers. Some key elements of the existing system include:

- Storage units: Rentable storage facilities typically include a range of unit sizes and types, including outdoor storage yards, indoor storage units, and climate-controlled units.
- Rental agreements: Storage facilities typically have clear and concise rental agreements, which outline the terms of the rental, including the rental period, rental fee, and any restrictions or limitations on unit access.
- Security: Most rental storage facilities have security measures in place, including gated access, surveillance cameras, and secure locks, to protect stored items from theft or damage.
- Convenient location: Rental storage facilities are typically located in convenient locations, close to major roads and highways, making it easy for farmers to access their stored items.
- Customer support: Storage facilities typically have customer support teams available to answer any questions or concerns that farmers may have during the rental period.

6. Drawbacks of Existing System:

The existing system for rental equipment for farmers has some drawbacks, including:

- Limited availability: In some areas, the rental equipment available may be limited, making it difficult for farmers to find the specific equipment they need.
- High rental costs: Rental costs for farming equipment can be high, particularly for specialized or highly sought-after equipment.
- Maintenance and repair costs: While rental companies typically handle maintenance and repair work for rented equipment, these costs can still add up and be passed on to the farmer in the form of higher rental fees.
- Long-term commitment: Rental agreements for farming equipment typically require a long-term commitment, making it difficult for farmers to change equipment if their needs change.
- Lack of control: Renting equipment means giving up some control over the maintenance, repair, and use of the equipment, which can be a disadvantage for some farmers.
- Limited customization: The equipment available for rent may not always be customized to meet the specific needs of individual farmers, which can result in reduced efficiency or effectiveness.

Despite these drawbacks, rental equipment remains a popular and cost-effective solution for many farmers, particularly those with seasonal or irregular equipment needs. However, it is important for farmers to carefully consider their equipment needs and rental options before making a decision.

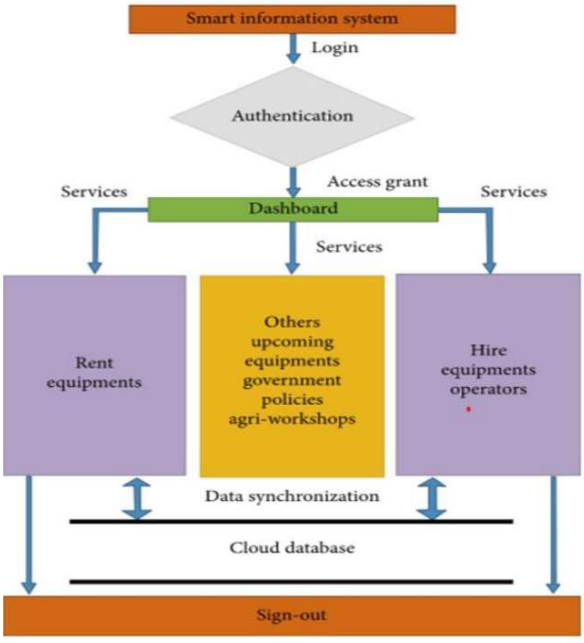
The existing system for rental storage facilities for farmers has some drawbacks, including:

- Limited availability: In some areas, rental storage facilities may be limited, making it difficult for farmers to find a facility that meets their needs.
- High rental costs: Rental costs for storage facilities can be high, particularly for larger or specialized units.
- Long-term commitment: Rental agreements for storage facilities typically require a long-term commitment, making it difficult for farmers to change storage options if their needs change.
- Accessibility issues: Some storage facilities may have limited access hours or be located in less convenient locations, making it difficult for farmers to access their stored items when they need them.
- Maintenance and repair costs: While storage facilities are typically well-maintained, there may still be maintenance or repair costs associated with renting a unit, which can be passed on to the farmer in the form of higher rental fees.
- Security risks: While most rental storage facilities have security measures in place, there is still a risk of theft or damage to stored items, which can be a concern for some farmers.

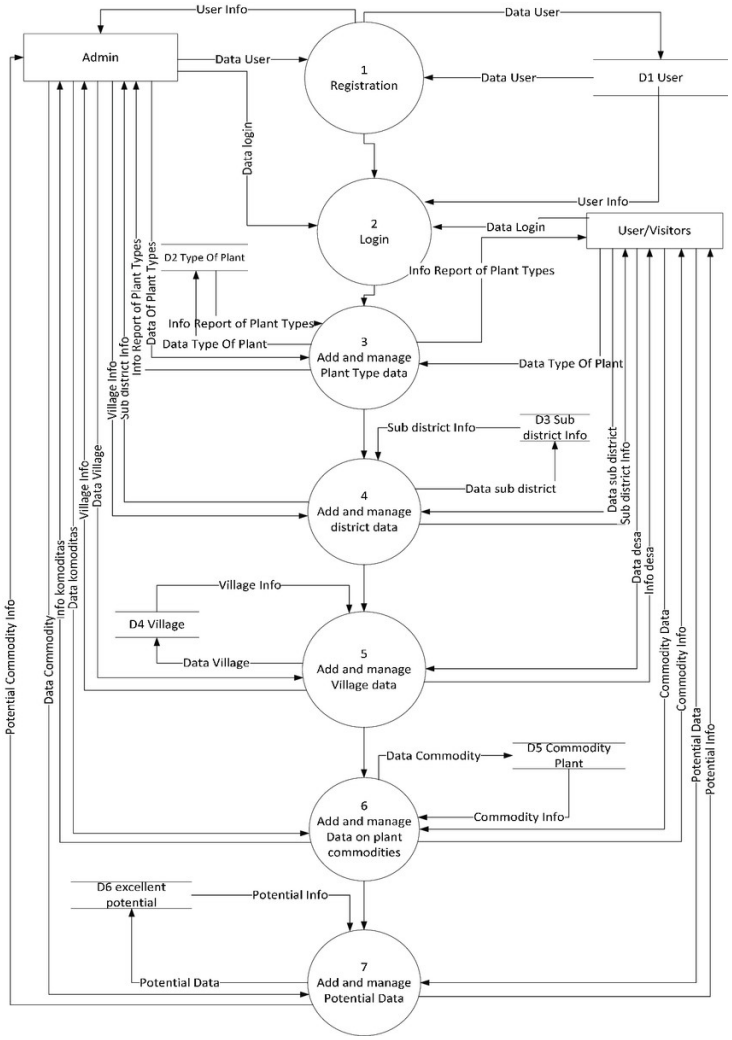
Despite these drawbacks, rental storage facilities remain a popular and cost-effective solution for many farmers, particularly those with seasonal or excess storage needs. However, it is important for farmers to carefully consider their storage needs and rental options before making a decision.

7. Use-case modules:

- Farmer equipment rental: This module will allow farmers to search, select, and rent equipment and tools that they need for their operations, including tractors, plows, harvesters, and more.
- Supplier management: This module will allow suppliers to manage their equipment and storage inventory, including updating availability, pricing, and delivery schedules, as well as managing customer relationships and transactions.
- Customer management: This module will allow farmers to manage their equipment and storage rental activities, including tracking and paying for their rentals, as well as viewing past transactions and invoices.
- Equipment maintenance and repair: This module will allow farmers and suppliers to track equipment maintenance and repair activities, including scheduling and tracking equipment repairs and maintenance, as well as viewing and updating equipment warranty information.
- Storage rental: This module will allow farmers to search, select, and rent storage facilities, including grain silos, barns, and warehouses, as well as manage their storage rental activities, including tracking and paying for their rentals, and viewing past transactions and invoices.
- Delivery and pickup: This module will allow farmers and suppliers to schedule and track equipment and storage delivery and pickup activities, including scheduling deliveries and pickups, as well as tracking delivery and pickup times and locations.
- Analytics and reporting: This module will allow farmers, suppliers, and administrators to view and analyze data on equipment and storage usage, rental activity, and customer behavior, including generating reports and visualizations on key metrics, such as usage trends, customer demographics, and more.



SYSTEM ARCHITECTURE



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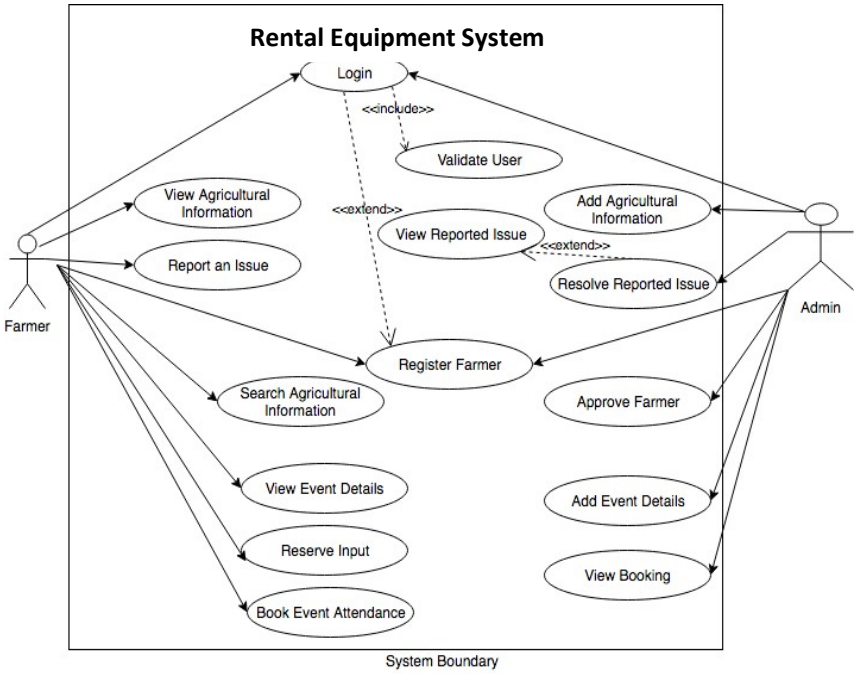

USE CASE DIAGRAM

8. Proposed System:

The aim of the proposed system is to develop a website for the farmers in order to help them in several domains. Our website will perform the following functions:

- Online marketplace: An online marketplace could be created to connect farmers with equipment rental companies, government rental organizations and individuals. This would provide farmers with a wide range of equipment options and help them find the best rental prices and terms.
- Farmers can check the price and temperature for storing final goods in the warehouse and can book it. They can also check the rate of crops currently running in the market and can sell it using our website.
- It may be possible that the user is not literate enough so in order to make it user friendly we will add an audio based assistant to make it more interactive.
- Our website will have a recommendation tool which compares the ranging crop, fertilizers, equipments prices & recommends best economical, accessible & efficient way to achieve the product.
- Products tracking: A product tracking system will be implemented to track the economical & best way to get most demand fertilizers in the time period of famine.
- Cost comparison: Our website will allow farmers to compare rental costs and terms across different rental providers, helping them to find the best rental options for their needs.
- Customized rental packages: Rental packages could be customized to meet the specific needs of individual farmers, including short-term rentals, long-term rentals, and flexible rental terms.
- Flexible rental options: Rentals could be made more flexible, allowing farmers to return equipment early or extend their rental periods as needed.
- Further User Profiles will be created for farmers based on their storage needs, preferences, and rental history.
- Feedback loops: The system will gather feedback from farmers on the rental equipments & storage facilities they rent and use this feedback to improve future recommendations.

9. Advantages of Proposed System:

- Cost savings: Renting equipment and storage facilities can be more cost-effective than purchasing them outright, especially for farmers who only need the equipment or storage space for a limited period of time.
- Access to the latest equipment: Renting equipment allows farmers to use the latest and most advanced equipment without having to make a large capital investment.
- Flexibility: Renting equipment and storage facilities gives farmers the flexibility to adjust their equipment and storage needs as their operations change and grow.
- Reduced maintenance costs: Renting equipment can reduce the maintenance costs associated with owning equipment, as the rental company is typically responsible for maintenance and repairs.

- Space optimization: Renting storage facilities can help farmers optimize the use of their space, allowing them to store more goods and equipment in a smaller area.
- Reduced risk: Renting equipment and storage facilities can reduce the risk of obsolescence and depreciation associated with owning equipment and facilities.
- Overall, renting equipment and storage facilities can provide farmers with greater flexibility, cost savings, and access to the latest equipment and facilities, helping them to grow and succeed in their operations.
- Farmers will be able to get the information of vacant warehouses according to the quantity of the material and the temperature needed to store the crops which will lower the searching process and efforts.
- If the owner of the warehouse is providing a better selling price than the marketplace, then the farmers will have the option to sell it to the owner itself.
- Overall the farmer can analyze the future circumstances.
- Audio based assistant will create a most interactive way to treat the farmer.

10. Project Description:

Our aim is to integrate different-different problem solutions at one place. The project for rental equipment and storage facilities for farmers aims to provide farmers with access to the latest equipment and storage facilities in a cost-effective and flexible manner. The project will include the following key components:

Equipment and storage facility database: A comprehensive database of available equipment and storage facilities, including information on equipment type, features, rental terms, and storage size and location.

Recommendation system: A recommendation system that uses machine learning and data analysis to provide personalized recommendations for equipment and storage facilities based on each farmer's needs and preferences.

User profiles: The system will create user profiles for farmers, allowing them to track their rental history and receive personalized recommendations.

Inventory management: A system to manage inventory and ensure that the right equipment and storage facilities are available when farmers need them.

Online marketplace: An online marketplace that provides a convenient and user-friendly platform for farmers to rent equipment and storage facilities, as well as a mechanism for suppliers to manage their equipment and storage facility listings.

The project will be designed to provide farmers with greater flexibility, cost savings, and access to the latest equipment and storage facilities, helping them to grow and succeed in their operations. The system will be scalable and adaptable, allowing it to accommodate the changing needs of farmers as they grow and evolve.

11. Methodology:

The methodology for the rental equipment and storage facilities for farmers project can follow these steps:

- Requirements gathering: Gather requirements from farmers, suppliers, and other stakeholders to ensure that the system meets their needs and expectations.
- System design: Design the system architecture and components, including the equipment and storage facility database, recommendation system, user profiles, inventory management, and online marketplace.
- Data collection and analysis: Collect and analyze data on equipment and storage facility usage and demand, as well as farmers' needs and preferences, to inform the development of the recommendation system.
- Development and testing: Develop and test the various components of the system, including the database, recommendation system, user profiles, inventory management, and online marketplace.
- Deployment: Deploy the system and make it available to farmers and suppliers.
- User acceptance testing: Conduct user acceptance testing to ensure that the system meets the needs and expectations of farmers and suppliers.
- Ongoing maintenance and improvement: Monitor the system and perform ongoing maintenance and improvement to ensure that it remains relevant and effective in meeting the changing needs of farmers and suppliers.

The methodology will be designed to ensure that the rental equipment and storage facilities for farmers project is delivered on time, within budget, and with high-quality results that meet the needs and expectations of all stakeholders.

12. Expected outcome:

The expected outcome from the rental equipment and storage facilities for farmers project is:

- Increased access to equipment and storage facilities: Farmers will have access to a wide range of equipment and storage facilities that are tailored to their needs and preferences, helping them to grow and succeed in their operations.
- Improved efficiency and cost savings: Farmers will be able to access equipment and storage facilities more efficiently, reducing their costs and improving their bottom line.
- Increased flexibility: Farmers will have greater flexibility to adjust their equipment and storage needs as their operations change, allowing them to be more responsive to market conditions and customer needs.
- Better data management and insights: Farmers will be able to track their equipment and storage usage, as well as their costs, providing them with valuable data and insights to inform their decision-making.

- Enhanced supplier management: Suppliers will be able to manage their equipment and storage facility listings more effectively, improving their ability to reach and serve farmers.
- Improved customer experience: Farmers will benefit from a more user-friendly and convenient online marketplace, improving their overall customer experience.
- Increased adoption and usage of the system: The system will be widely adopted by farmers and suppliers, helping to drive increased usage and effectiveness over time.

Overall, the rental equipment and storage facilities for farmers project will help farmers to grow and succeed in their operations, while improving the overall efficiency and effectiveness of the equipment and storage rental industry.

13. Resources and Limitations:

Resources:

Financial: The project will require sufficient funding to cover development, deployment, and ongoing maintenance and improvement costs.

Personnel: A team of developers, & skilled technicians will be required to design, develop, and maintain the system.

Equipment and infrastructure: The project will require access to hardware, software, and networking resources, as well as a secure data center to host the system.

Data: The project will require access to data on farmers' needs, preferences, and equipment and storage usage, as well as data on suppliers' inventory and pricing.

Limitations:

Technical: The project may be subject to technical limitations, including the need to ensure compatibility with existing systems and the need to meet security and data privacy requirements.

Time and budget: The project may be subject to time and budget constraints, requiring careful management of resources and priorities to ensure that it is delivered on time and within budget.

User adoption: The success of the project will depend on the willingness of farmers and suppliers to adopt the system, and their satisfaction with its performance and results.

Market conditions: The project may be impacted by changes in market conditions, including changes in equipment and storage demand, pricing, and availability.

Despite these limitations, the rental equipment and storage facilities for farmers project has the potential to make a significant positive impact on the agriculture industry, helping farmers to grow and succeed in their operations.

14. Conclusion:

In conclusion, the rental equipment and storage facilities for farmers project is a promising initiative that has the potential to bring significant benefits to farmers, suppliers, and the agriculture industry as a whole. By providing farmers with increased access to equipment and storage facilities, as well as improved efficiency and cost savings, the project will help farmers to grow and succeed in their operations. Additionally, by improving supplier management and enhancing the customer experience, the project will help to drive increased adoption and usage of the system over time. While the project may face challenges and limitations, including time and budget constraints, user adoption, and market conditions, careful planning and management will be key to ensuring its success. Overall, the rental equipment and storage facilities for farmers project has the potential to make a meaningful impact on the agriculture industry, and is a valuable opportunity to support and strengthen the industry for years to come.The proper documentation of complete mission is also supplied so that any-you can recognize the project and may do the vitalAdjustments if required. This application may be advanced in many methods and may be extended to guide multiple devices.Inclusion of crops and fertilizers to the list.In Recommendation system this website will suggest cost, storage information , fertilizers and pesticides according to farmers needs by using machine learning it pop up the website.In additional to all of that there would be auto guided audio system to make our website more interactive to easily help farmers to understand and guide.

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