technical career education.

Innovation and Design Thinking Course

PROJECT REPORT

2023-24

HARVEST GUARD

Section G

CONTENTS

Project Overview

ProjectTitle	**HARVEST GUARD** -	
Class/section	SECTION G	
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Problem identified	Conserving And Reusing Rain Water	
Solution proposed	Harvest Guard: Cultivate Rain	
Link to the idea pitch presentation		
Link to photos drive		

1. Introduction

Introducing "HarvestGuard: Cultivate Rain", a groundbreaking solution poised to revolutionize rainwater harvesting (RWH) for farmers. Harnessing the power of innovation and digitalization, this app is not merely a tool but a comprehensive ecosystem designed to empower farmers with the knowledge and resources they need to optimize water usage, mitigate risks, and enhance agricultural productivity. HARVEST GUARD, a game-changer in the realm of agricultural water management. At its core, the app leverages cutting-edge technology to provide farmers with real-time data, actionable insights, and personalized recommendations tailored to their specific needs and circumstances.

2. Field Visit

They didn't have more knowledge about various methods of rainwater harvesting and existing tools.They used to store rainwater in a very old traditional way by digging pits around the trees and plants.They also had a borewell to store rainwater

3. Problem statement

Conserving And Reusing Rain Water

3.1 a) What is the problem?

scarcity of Water

3.1 b) Why is it a problem?

scarcity is caused by population growth,low rainfall,unsustainable water uses practises. the main problem is there is no awareness and education about rainwater harvesting among the farmers

3.1 c) Who is facing the problem?

Farmers

3.1 d) When and where does the problem occur?

Climate change can lead to changes in weather patterns, such as increased frequency and intensity of extreme weather events like droughts, floods, and storms. These changes can affect soil fertility, crop yields and livestock production, leading to reduced productivity and income for farmers.

3.1 e) What are the existing solutions?

Rainwater harvesting systems are presented as a feasible alternative to increase water resources for agricultural use. However, the installation of these systems in farmers' holdings is very limited.

Though the practice of conserving and reusing rainwater in India has been into existence since ages, its real importance is only felt in the past few years. It takes a lot of awareness to gather people for their cooperation in such a benefitting initiative.

Community-Based Water Management: Collaborating with neighboring farmers to implement shared rainwater harvesting systems or watershed management practices. Problems may include: •Coordination challenges among farmers, especially regarding water allocation and management. •Equity issues related to access and distribution of harvested water. •Potential conflicts over water rights and usage.

3.1 f) What are users/ stakeholders complaining about the existing solutions?

The main existing solution is Rain water harvesting.

Disadvantages of Rainwater Harvesting

- Regular maintenance is required.

- Requires some technical skills for installation.
- Limited and no rainfall can limit the supply of rainwater.
- If not installed correctly, it may attract mosquitoes and other waterborne diseases.
- Certain Roof Types may Seep Chemicals or Animal Droppings

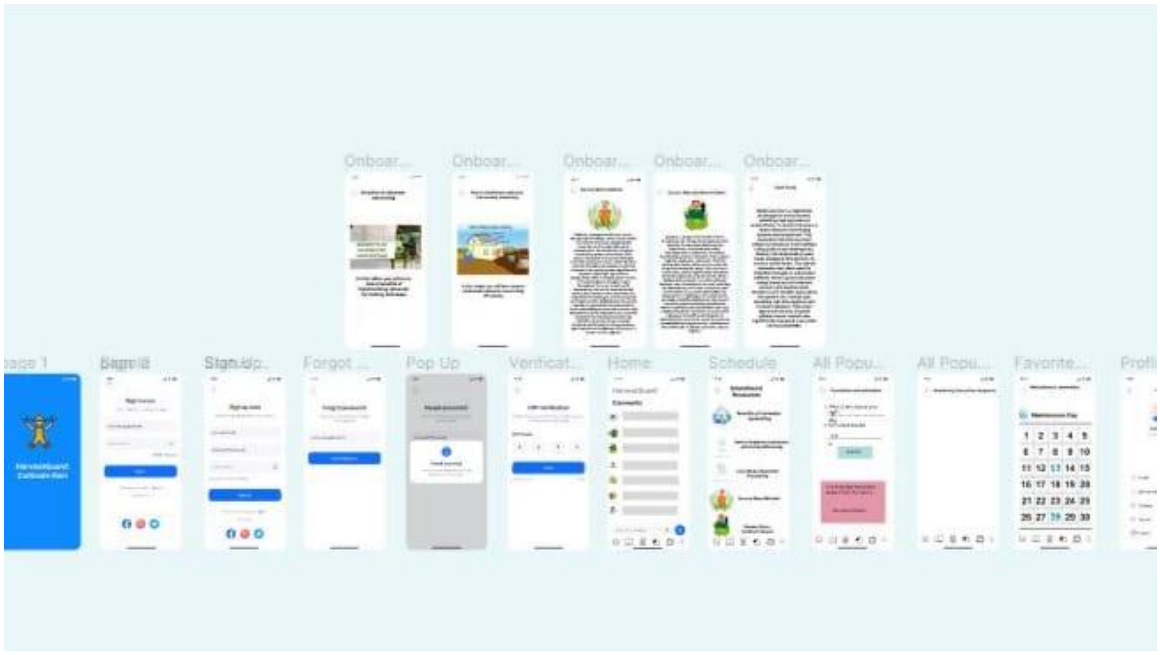
4. Solution

4.1 Ideation

The ideation process for conserving and reusing rainwater harvesting involves understanding the need for sustainable water management, researching current methods, and brainstorming innovative ideas. Key concepts are refined and evaluated for feasibility and effectiveness. Prototypes are created and tested, leading to the design and installation of a full-scale system. Community engagement and education are crucial for raising awareness and ensuring the system's success. Continuous monitoring and improvement based on feedback and advancements ensure long-term sustainability and effectiveness of the rainwater harvesting system.

4.2 Prototype

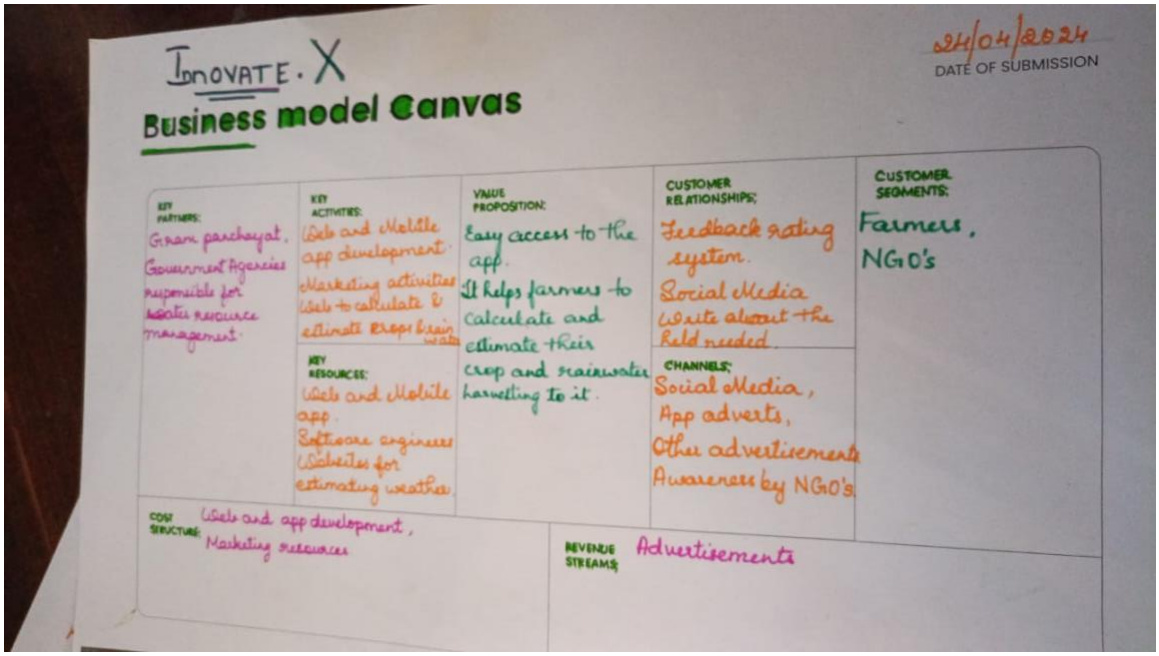
The development of the Harvest Guard app involves several key steps. Initially, the project begins with identifying the core problem—efficiently capturing and utilizing rooftop rainwater for agricultural purposes. The next step is to conduct comprehensive research to understand user needs, environmental factors, and existing solutions. Following this, the team moves to the design phase, using tools like Figma to create a user-friendly interface and experience. This involves wireframing, prototyping, and iterating based on user feedback. Concurrently, the development team starts coding the app, ensuring seamless integration of features such as water level monitoring, weather forecasting, and data analytics for water usage optimization. Rigorous testing is conducted to identify and fix bugs, ensuring reliability and performance. Finally, the app is deployed, followed by continuous monitoring and updates based on user feedback and technological advancements. This holistic approach ensures that Harvest Guard effectively addresses the water conservation needs of farmers.



4.3 Business Model Canvas

The Business Model Canvas for a business focused on conserving and reusing rainwater harvesting includes several key components. *Key partners* involve suppliers of rainwater harvesting equipment, local governments for regulatory support, non-profits focused on water conservation, and construction companies for installation. *Key activities* include research and development of innovative technologies, system installation, regular maintenance and support services, and community engagement for education and awareness. *Key resources* consist of technical

expertise in engineering and environmental science, reliable equipment, and a dedicated team for customer service and outreach. This comprehensive approach ensures a sustainable and effective business model for rainwater harvesting.



5. Conclusion

In conclusion, Harvest Guard offers a comprehensive solution to the critical issue of water scarcity in agriculture by optimizing the use of rooftop rainwater. By leveraging modern technology and a user-centric design, the app empowers farmers to efficiently capture, store, and utilize rainwater, significantly reducing dependency on traditional water sources. This not only conserves precious water resources but also promotes sustainable farming practices. The real-time monitoring and data analytics features enable farmers to make informed decisions, enhancing crop yields and resilience against climate variability. Ultimately, Harvest Guard fosters a more sustainable and resilient agricultural ecosystem, contributing to environmental conservation and the well-being of farming communities.

1.Community Engagement and Knowledge Sharing

2.Educational Resources

3.Calculators and Estimators

4.Weather Forecast Integration

5.Monitoring and Maintenance Reminders

6. image Gallery

https://drive.google.com/drive/folders/1v4Fm8sMjvCC2xdSZDy4xliPfNGAtaIDc