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Empowering farmers through data-driven decision-making

Team - IIIT Hyderabad

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Problem Statement

Farmers lack reliable tool for accurate estimate of initial investment costs and the estimate profit they will be generating for making a confident decision for cultivating specific crops, causing inefficient financial planning and resource management.

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Defining (WHO) the small & marginal farmer

Rajesh Kumar

Age: 48

Location: Buxar, Bihar

Background : Rajesh manages a small family-owned farm with traditional methods and limited education.

Total Land : 2 Acre

DESCRIPTION

Rajesh Kumar comes from a family with a long history of farming. He inherited a small piece of land from his father, which he cultivates to support his family. He has limited formal education and relies heavily on his agricultural knowledge and experiences passed down through generations.

GOALS

- **Profitable Farming**: Rajesh wants to improve profitability by choosing crops with better returns.
- **Resource Efficiency**: He aims to optimize resource allocation for better yield.
- **Family Security**: Ensuring his family's financial stability is his top priority.

CHALLENGES

- **Limited Resources**: Rajesh struggles to maximize yield with his small landholding and limited resources.

- **Financial Stability**: Rajesh seeks stable income to support his family's needs and secure his children's future.

NEEDS

- **Accurate Cost Estimation:** Rajesh seeks precise investment cost estimates for effective budgeting.
- **Profit Predictability:** He wants to anticipate profits amidst fluctuating market prices.
- **Stable Income:** Rajesh needs a steady income source to support his family.
- **Enhanced Profitability:** He aims to improve profits by selecting high-return crops.
- **Resource Optimization:** Rajesh looks to optimize resource usage for better yields.
- **Financial Security:** Ensuring his family's stability is a top priority.
- **Informed Decisions:** He desires personalized insights for intelligent farming choices.

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Pain Points faced by the farmers due lack of Data

Improper Financial Planning

Ineffective budgeting results in **overspending, debt, resource misallocation,** and **missed opportunities. Businesses** suffer **cash flow issues,** while **individuals** experience **financial stress** and lack of **savings.**

Crop Choice

Farmers' profitability suffers as they choose crops solely based on **lower input costs,** ignoring **overall potential.**

Incorrect Timing

Farmers miss **profitable market entry points** due to **unawareness** of favorable pricing periods.

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Solution

AnnData is a mobile app crafted to transform how farmers strategize their crop planning. Equipped with precise input cost projections and profit forecasts by training a ML model with datasets and predicting, this tool empowers farmers to make well-informed choices in their agricultural endeavors ahead of the time.

(1) Accurate Investment Cost Estimates	(2) Crop Comparison	(3) Location Specific Insights	(4) Real-Time Updates

Using Data Taken from Source : Data.gov & India Stats
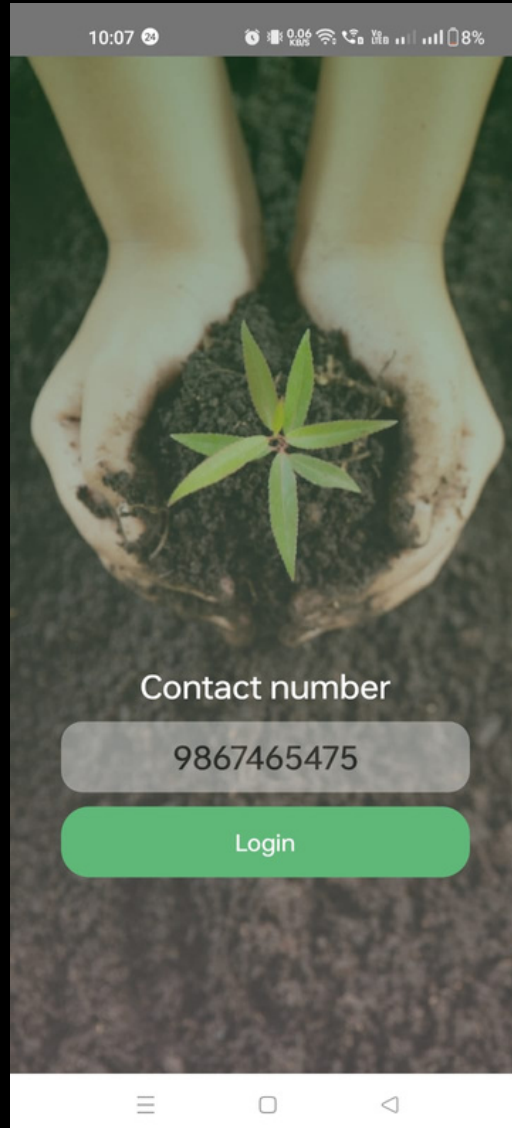
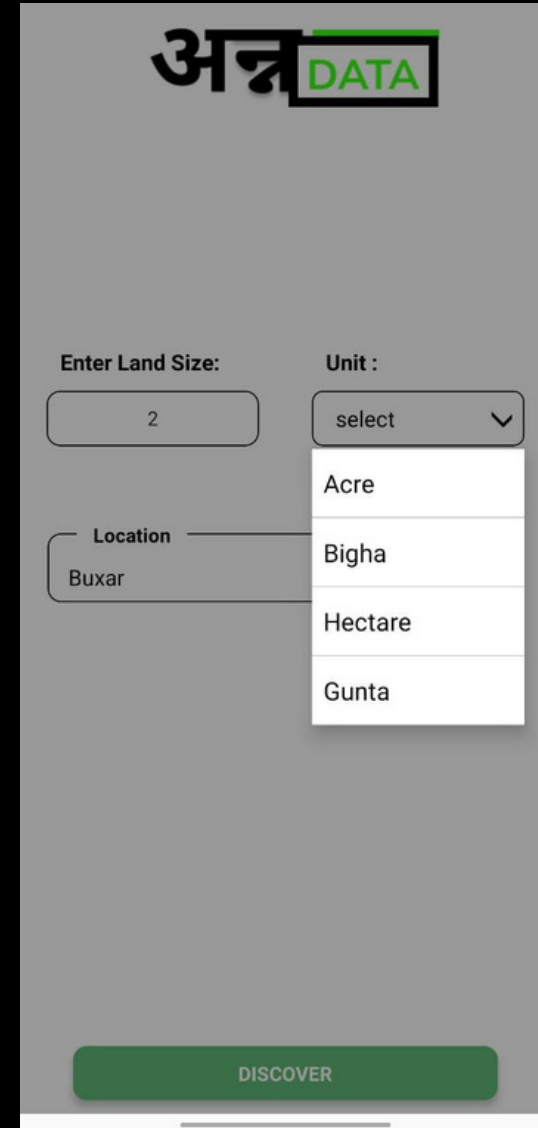अन्नDATA

APPLICATION CAPABILITIES
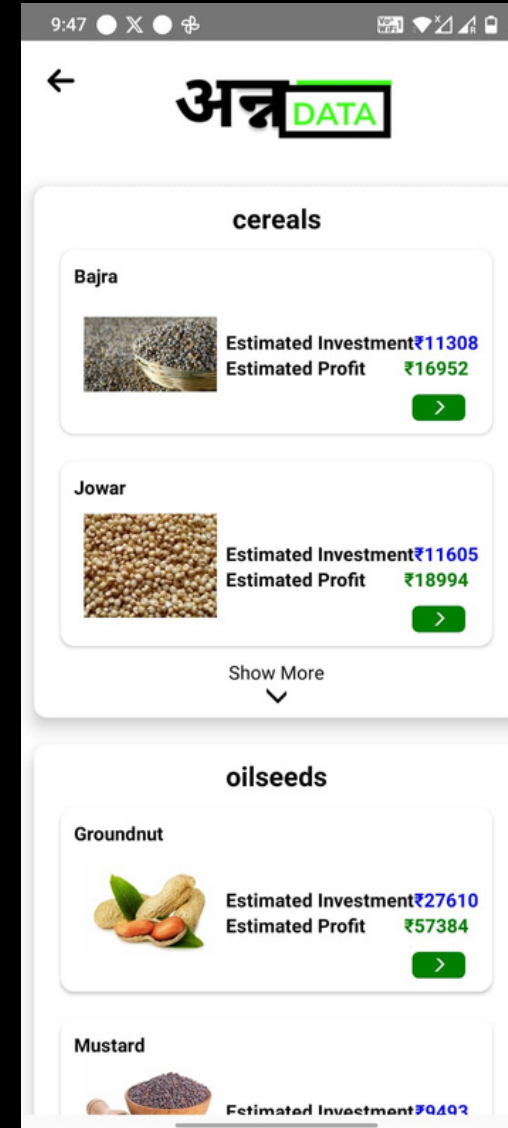

Screen 1

Welcome Screen

Screen 2
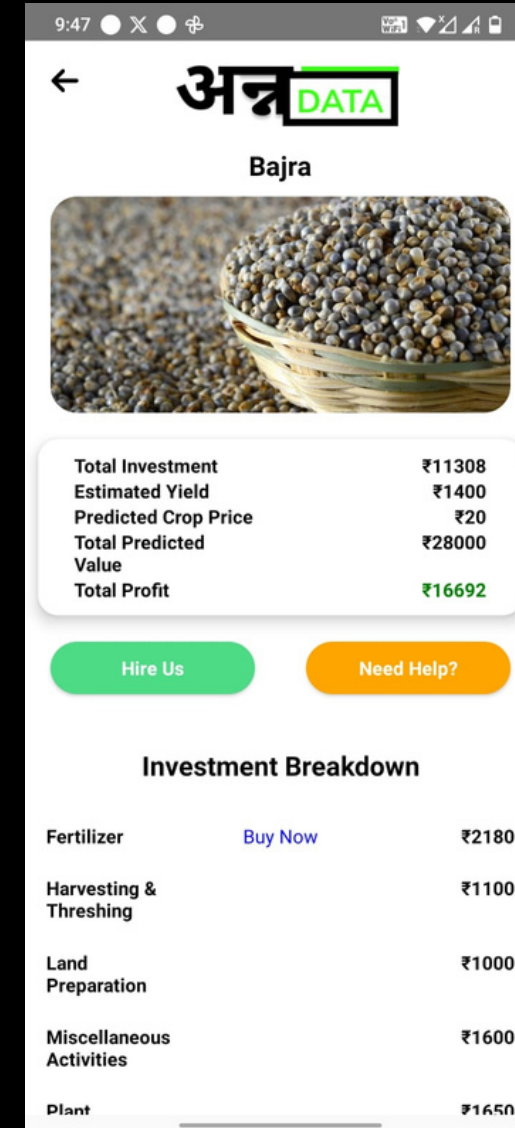
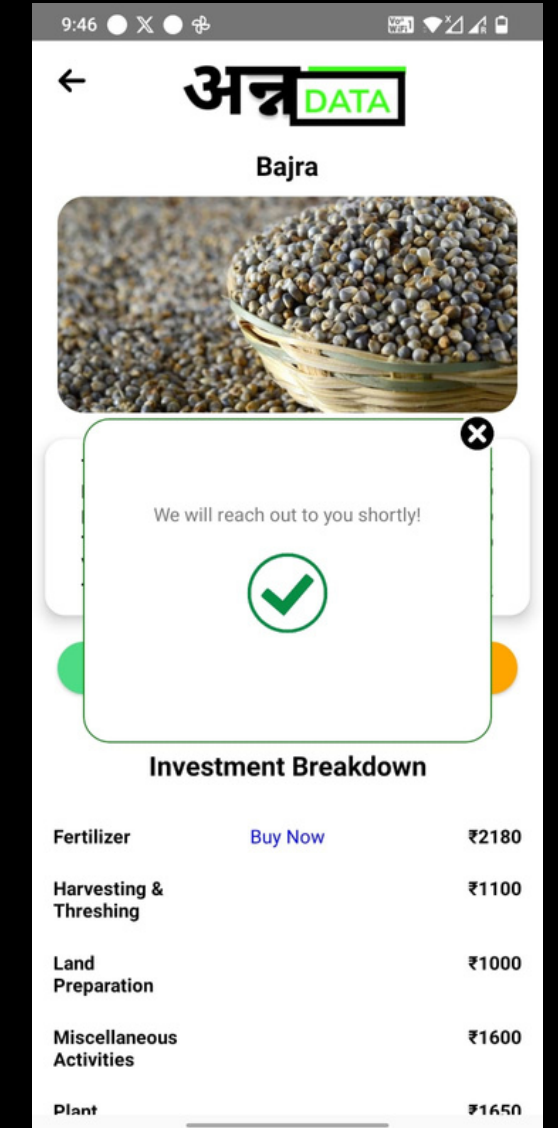Onboarding

Screen 3

Get I/p parameters

Screen 4

Crop Listing
Investment cost
Estimated profit

Screen 5

Helping farmers
Buy seeds, fertilizers &
buy tailor made
contracting solution

Screen 6

Acknowledgement /
sending sms & instant call
from experts

BUSINESS MODEL

Service Offering	- End-to-end farming services for small and marginal farmers
	- Option to purchase seeds and pesticides from partner vendors at subsidized rates
Target Audience	- Small and marginal farmers seeking comprehensive support and affordable inputs
Value Proposition	- Holistic farming solutions for reduced operational challenges
	- Cost-effective access to quality agricultural inputs
	- Streamlined input purchasing process
Revenue Generation	- Service Fee: Small x% charge on farmers' overall profits
	- Commission: Earns a commission on partner vendors' sales through the platform
Benefits	- Cost savings on inputs
	- Convenient and simplified input purchasing
	- Enhanced potential for profitable farming
Overall Impact	- Comprehensive support for farmers' needs and livelihoods
	- Encourages sustainable agriculture and improved farm profitability

Individuals who have experienced the loss of family members, are facing health challenges, uncertain circumstances, or have lost hope in farming, are seeking assistance to manage their farms.

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METRICS

Input Metrics (resource & effort)	Output Metrics (Direct impact)	Guardrail Metrics (Business & health/Success)
1. Number of Farmers Engaged	1. Increase in Crop Yield	1. Farmers Retained
Measure of how many farmers actively use the app.	Percentage growth in the amount of crop produced.	Percentage of initial farmers who continue using the app.
2. Adoption Rate of App	2. Growth in Farmer Profits	2. Feedback Satisfaction Rate
The rate at which new farmers adopt the app.	Measure of the increase in farmers' earnings.	Percentage of users who express satisfaction with app.
3. Partnerships with Subsidized Input Vendors	3. Improved Resource Utilization	3. Farm Continuity
Number of partnerships established for input procurement.	Reduction in resource wastage and efficient use.	Percentage of farmers who continue farming with app.
	4. User Engagement	4. Partnership Engagement
	Measurement of user activity and interaction.	Number of vendor partnerships maintained.
	5. User Feedback Satisfaction	5. Financial Stability Impact
	Assessment of user satisfaction based on feedback.	Assessment of whether users report increased stability.

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Bottlenecks/Difficulties faced in making the solution

Collecting reliable data set

Matching Multiple Variables & Parameters

Integration between ML Model & Apps UI

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Feasibility Strategy

Technical	Robust technical infrastructure for app performance.
Ensure app's performance and reliability.	Regular testing and updates to maintain seamless user experience.
Financial	Evaluate costs vs. revenue to ensure sustainability.
Assess profitability and ongoing costs.	Regular financial assessments to adapt to changing conditions.
Operational	Efficient management of data, recommendations, and partnerships.
Streamline processes for optimal workflows.	Ensure operational readiness to handle increasing user activity.
User Adoption	User-friendly interfaces and compelling value propositions.
Implement user-centric design and onboarding.	Encourage user adoption through clear benefits.
Vendor Collaboration	Establish partnerships with subsidized input vendors.
Form partnerships with reliable input vendors.	Ensure vendor capacity to meet growing user demand.

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Scalability Strategy

Technical	Modular architecture for accommodating user growth.
Design scalable infrastructure for increased demand.	Implement cloud-based solutions for resource scaling.
User Base	Growth-focused marketing to attract new users.
Develop strategies for user acquisition and retention.	Optimize marketing efforts based on engagement data.
Vendor Network	Expand partnerships with subsidized input vendors.
Scale partnerships to meet rising demand for inputs.	Ensure readiness of vendors to support increased needs.
Feature	Continuous feature enhancements based on user feedback.
Develop a roadmap for adding new functionalities.	Ensure app remains relevant and valuable over time.
Regional Expansion	Plan expansion into new geographic regions.
Localize app's offerings to cater to unique regional needs.	Ensure seamless scalability to new areas.
Operational	Automate backend processes for efficiency.
Develop streamlined backend workflows for handling growth.	Efficient data management and partner coordination.

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Future Scope

- Broadening the feature space and training the ML model according to it for accuracy.

- Collaboration with experts in Agri-Tech and government body.

- Scope of internalized end-to-end solution.

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