AgriCon Dataset Documentation

1. Project Overview

The AgriCon Dataset was developed to understand challenges and opportunities within the agricultural ecosystem in Iseyin-Ipapo Farm Settlement, Oyo State. The project focuses on small- and medium-scale farmers involved in crop production and post-harvest activities, who form the majority of the agricultural workforce in many African regions due to lower capital requirements and land ownership constraints.

2. Project Objectives

The primary objectives are to:

- Design a data-driven digital agriculture platform (AgriCon) that minimizes post-harvest losses.

- Enhance market access and logistics coordination.

- Improve financial inclusion via mobile payments.

- Support digitally excluded farmers.

- Empower farmers with data-driven insights.

3. Data Collection

- **Location**: Iseyin-Ipapo Farm Settlement, Oyo State (70% concentration in South West Nigeria, likely due to favorable agro-climatic conditions, better access to inputs, infrastructure, and survey outreach).

- **Method**: Direct field interviews and structured surveys.

- **Sample Size**: 20 farmers.

- **Tools**: Google Sheets, Excel, Python.

- **Languages**: English/Yoruba.

- **Privacy**: Anonymous responses.

4. Team and Collaboration

This project was a joint effort between Product Managers and Data Analysts, with clear role distribution and continuous collaboration throughout the research and analysis process.

- **Product Managers** were responsible for:

  - Designing the survey questions.

  - Distributing the survey to target farmers via WhatsApp, X (Twitter), and in-person at markets.

- Assigning analysis tasks to the data team.
   - Identifying potential partners (e.g., MTN, Kobo360) based on research insights.
   - Drafting the Product Requirements Document (PRD) using insights provided by the data team.
- **Data Analysts** were responsible for:
   - Cleaning and analyzing the collected survey data.
   - Creating visualizations (bar charts, pie charts, pivot tables) to reveal patterns in crop spoilage, storage needs, technology access, and willingness to pay.
   - Extracting key insights to guide product decisions.
   - Designing an interactive dashboard to communicate findings clearly.

Regular communication and feedback loops between both groups ensured that analysis aligned with business needs and that feature planning was rooted in real farmer data.

5. Data Analysis Contributors

The following data analysts collaborated on the analysis, visualization, and interpretation of the survey data for AgriCon Nigeria:

- Odi Chibuzor Greg
- Amankwe Amarachi Francisca
- Amakor Euphemia Chima
- Tina Rufai
- Emmanuella Agyapong

Their contributions were key in uncovering actionable insights that guided product planning and feature prioritization.

6. Key Insights & Analysis

6.1 Farmer Demographics

- **Insight**: Majority are small- and medium-scale farmers due to limited capital and land ownership constraints.
- **Recommendations**:
   - Tailor programs and app features specifically to small- and medium-scale farmers.
   - Design affordable pricing models, support systems, and services based on their limited resources.
   - Include case studies and testimonials from similar-scale farmers to build trust.

6.2 Regional Concentration

- **Insight**: 70% of respondents are in South West Nigeria, likely due to favorable conditions and better survey outreach.

- **Recommendations**:
  - Deepen penetration in the South West initially through pilot programs and feature testing.

6.3 Lack of Access to Services

- **Insight**: 78% of farmers lack access to services due to low awareness, inadequate extension agents, and potential trust issues with external providers.

- **Recommendations**:
  - Partner with local cooperatives and extension agents to raise awareness.
  - Offer onboarding education and training modules (online/offline).
  - Launch community service centers to bridge gaps physically.
  - Provide a "service marketplace" in-app with trusted providers and user ratings.

6.4 Technology Access

- **Insight**: 75% own smartphones, but only 50% use the internet; strong preference for USSD due to cost, ease, or literacy.

- **Recommendations**:
  - Maintain dual accessibility: a fully functional app and robust USSD interface.
  - Offer voice-based or pictorial content in local languages to address literacy issues.
  - Develop internet-lite app versions that work with poor connectivity.

6.5 Crop Prioritization

- **Insight**: Top crops are maize, cassava, and tomatoes, driven by local dietary needs, market demand, and climate; tomatoes may require more resources.

- **Recommendations**:
  - Focus support services and content on maize, cassava, and tomatoes.
  - Create crop-specific bundles (planting calendars, input sourcing, AI-enabled disease detection).
  - Partner with input providers for seeds, fertilizers, and pest control targeting these crops.

6.6 Infrastructure Challenges

- **Insight**: 60%+ lack access to cold rooms/processing plants; 51%+ spoilage rates due to poor rural electrification, lack of capital, weak logistics, and limited public-private partnerships.

- **Recommendations**:
  - Offer micro-financing or cooperative-based leasing for shared dryers and cold rooms.
  - Partner with off-grid solar providers to address electricity access.
  - Map existing infrastructure (e.g., cold rooms, processors) and connect farmers to them.
  - Collaborate with NGOs or government to lobby for rural infrastructure development.
  - Provide mobile or decentralized processing units on demand.

6.7 Regional Differences in Crop Cultivation

- **Insight**: Variations due to soil type, rainfall patterns, market demands, cultural preferences, and limited access to inputs/information.

- **Recommendations**:
  - Customize advisory content by region, crop, and farmer scale.
  - Include agro-ecological zoning maps and suggestions in the app.
  - Promote inter-regional exchange programs or knowledge-sharing groups.

6.8 Desired App Features

- **Insight**: Most preferred features include real-time availability, group bookings, USSD, and transport coordination; price forecasting is less prioritized.

- **Recommendations**:
  - Build a live marketplace with real-time stock, service, or weather/disease alerts.
  - Enable group bookings for bulk purchases or services (e.g., tractor hire).
  - Add an "Uber-for-agri-logistics" feature for shared transport and market trips.
  - Subtly bundle price forecasts in decision-making tools or dashboards.

6.9 AI Recommendations & Premium Subscription

- **Insight**: Low AI adoption (19 out of 37) due to lack of understanding, trust, or perceived relevance.

- **Recommendations**:
  - Explain AI outputs clearly and provide evidence of success.

- Use in-app testimonials and case studies.
- Bundle AI features within a free trial of premium subscription to increase adoption.
- Simplify language and visualization of AI suggestions.

7. Dataset Structure

File Format: Excel (.xlsx) with 4 sheets:

- **Farmers**: Demographic and operational data.
- **Growing crops**: Crop-specific information.
- **Lack of access**: Infrastructure/service gaps.
- **Useful app features**: Feature preferences.

8. Implementation Recommendations

8.1 Technology Implementation

- Mobile-first platform with USSD fallback.
- Voice-based interfaces for low-literacy users.
- Offline-capable features.

8.2 Service Models

- Cooperative storage solutions.
- Shared equipment leasing.
- Community service centers.

8.3 Educational Components

- Onboarding training modules.
- AI explanation systems.
- Testimonials and case studies.

8.4 Partnerships

- Local cooperatives and extension agents.
- Input suppliers (seeds, fertilizers).
- Off-grid solar providers.
- Government/NGOs for infrastructure.

9. Usage Guidelines

- **Purpose**: Internal research and development.

- **Region**: Initially focused on South West Nigeria.

- **Scaling**: Pilot programs recommended before expansion.

- **Privacy**: Maintain respondent anonymity.

10. Conclusion

In conclusion, this project successfully provided data-driven insights to guide the development of AgriCon Nigeria's mobile-first platform. Through careful analysis of farmer survey responses, we identified critical challenges such as high spoilage rates, lack of access to cold storage and markets, and limited use of digital tools.

The visualizations and dashboards created by the data analysts enabled the product managers to prioritize platform features such as IoT-powered cold rooms, solar dryers, and USSD access for basic phone users. These insights are now being used to draft a Product Requirements Document (PRD) that ensures AgriCon's solution is grounded in real farmer needs and preferences.

This collaborative effort between data and product teams shows how combining analytics with strategic planning can lead to impactful, farmer-centered tech solutions.