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CHAKULAKONNECT'S PRODUCT REQUIREMENT DOCUMENT

A Digital Platform for Affordable, Nutritious Food Access and Farmer Market.

Capstone Project Group 19
WOMEN TECHSTERS FELLOWSHIP

Team Name: Njaa Zero Hub

Capstone Project Team Number: Team 19 Project

Title: ChakulaKonnect; A Digital Platform for Affordable, Nutritious Food Access and Farmer

Market Linkages Industry / Sector: Agri tech / Food Systems Technology

Assigned Sustainable development goal (SDG): SDG 2 - Zero Hunger

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PRODUCT REQUIREMENTS DOCUMENT (PRD)

ChakulaKonnect

Industry: AgriTech / Food Systems Technology

SDG Alignment: SDG 2 – Zero Hunger

1. Overview

ChakulaKonnect is a digital marketplace platform (mobile and web-based) designed to connect small-scale farmers, food vendors, and retailers with consumers seeking affordable, nutritious food. The platform reduces inefficiencies in food distribution by enabling surplus food listing, improving affordability, promoting nutrition awareness, and integrating AI-powered recommendations and demand forecasting.

2. Problem Statement

Even though Africa produces enough food to feed its population, millions of people across the continent still struggle with food insecurity. About 345 million Africans face acute food insecurity, and nearly three quarters of people in sub-Saharan Africa cannot afford a healthy diet (FAO, 2023; Reliefweb, 2023). High food prices and rising inflation make it even harder for low-income households to access nutritious meals (UNICEF, 2024).

Smallholder farmers, who produce more than 70 percent of Africa's food, often face unstable incomes because of unpredictable markets, high input costs, and limited access to buyers. At the same time, up to 40 percent of perishable food is lost after harvesting due to weak storage and transportation systems across the continent (USAID, 2023; Guardian Africa, 2022).

Limited access to nutritional information adds another layer to the problem. Studies show that in many African communities, up to 75 percent of adults have very low basic nutrition knowledge, affecting their understanding of food groups and healthy diets (Science Direct, 2025). Research also shows that caregivers with better nutrition knowledge make healthier food choices for their children, highlighting the role of information in shaping dietary outcomes.

Currently, there is no digital platform in Africa that fully connects farmers, food processors, vendors, and consumers while reducing food waste, improving access to nutritious meals, and helping farmers earn more stable incomes. **ChakulaKonnect** aims to fill this gap by linking surplus food sources with people who need them, making nutritious food more accessible, reducing waste, and creating economic opportunities for both producers and urban consumers.

3. Objectives

Primary Objectives:

Goal	Objective	Success Metrics
Improve access to affordable nutritious food	Connect households to nearby affordable food sources and discounted surplus produce through a digital platform	20% average reduction in food purchasing costs among active users within 12 months
Reduce food waste	Enable real-time listing of surplus produce from farmers and vendors to match with local demand	20–25% reduction in reported post-harvest losses among participating farmers within the first year
Provide stable market access for farmers	Offer direct-to-consumer and vendor-to-household digital marketplace access	15% increase in consistent monthly sales for registered farmers within 12 months
Integrate AI-driven recommendations	Develop budget-based and preference-based food and nutrition recommendations for users	60% user engagement rate with AI recommendations within 6 months of launch
Enable AI-Powered Market Intelligence & Smart Decision Support	Leverage AI to automate food discovery, generate personalized budget-based recommendations for consumers, and provide real-time demand forecasting insights for farmers and vendors to support proactive pricing and production decisions.	60% of active users engage with AI-powered recommendations within 6 months. 70% of participating farmers access AI demand insights monthly. 10–15% reduction in unsold inventory volatility within 12 months.
Increase Farmer Income Stability	Provide direct-to-consumer access, reducing reliance on middlemen and expanding market reach.	15–20% increase in average monthly sales for active farmers/vendors within 12 months.
Improve Nutrition Access & Awareness	Offer budget-based meal suggestions and balanced food basket recommendations.	70% of users report improved meal planning or healthier food choices after 3–6 months of use.

Secondary Objectives

Goal	Objective	Success Metrics
Increase farmer income predictability	Provide demand forecasting insights and recurring buyer connections	10–15% reduction in unsold inventory volatility within participating farmer groups
Promote balanced diet awareness	Deliver simple nutrition guidance and balanced food basket suggestions	65% of surveyed users report improved understanding of balanced diets after 6 months
Provide food demand insights	Use aggregated platform data to generate local demand and pricing trends	Quarterly demand insight reports generated and shared with at least 70% of registered farmers
Strengthen Community Trust	Implement verified vendor profiles, transparent pricing, and user reviews.	80–90% positive user trust rating in feedback surveys.
Promote Digital Inclusion	Design a simple, low-data, mobile-friendly interface (including USSD option where applicable).	60% adoption rate among first-time digital marketplace users in target communities.
Improve Market Transparency	Provide real-time pricing insights and location-based availability.	30% reduction in price uncertainty complaints from users.

4. Target Users & Personas
Primary Users: Consumers (Low to middle-income households)

Primary Users: Small-Scale Farmers

Secondary Users: Vendors, NGOs, Policymakers

5. MVP Key Features

Feature	Description	Priority
User Registration & Authentication	Users sign up and sign in as consumers, farmers, vendors, or admins. Includes account verification and secure access.	Must-have
Admin Dashboard	Admins can review and approve new users, moderate food listings, and monitor platform analytics and activity.	Must-have
Food Listing Marketplace	Farmers and vendors can upload food items with details like price, quantity, expiration date, and location for discovery by others.	Must-have
Search & Discovery Filters	Allows users to see listings and filter listings by price, location, food type, and nutrition tags to find what they need quickly.	Must-have
AI Smart Recommendation & Demand Forecasting Engine	AI engine that analyzes real-time marketplace data, predicts demand trends, recommends pricing/supply adjustments, and reduces surplus through predictive redistribution.	Must Have
Farmer & Vendor Dashboard	Allows producers to track sales, view performance data, and forecast demand based on user interest and listings.	Must-have
AI Budget-Friendly Basket Recommendations	Provides suggestions for food combinations that fit a user's budget and nutritional needs based on their preferences.	Should-have
Nutrition Tagging System	Every food item gets tagged with nutritional information to help users make healthier choices even as they browse listings.	Should-have
AI Chat Assistant	Guides users through onboarding, helps answer common questions, and supports navigation of the marketplace and dashboards.	Should-have

Feature	Description	Priority
Listing Activity Tracking & Alerts	Tracks changes like price updates, new listings, expiring items, and send alerts to users who care about specific items.	Should-have
Delivery & Logistics Tracking	Vendors can indicate delivery options, and the platform tracks shipments in real time using partner APIs or integrated tracking tools.	Should-Have
Basic Messaging Between Users	Simple chat so buyers and sellers can communicate directly about a listing or ask questions before purchase.	Could-have
Ratings & Reviews	Lets consumers leave feedback on food listings and vendor/producer reliability.	Could-have
In-App Payment Integration	Supports payment for purchased items directly on the platform (e.g., mobile money or card payment).	Could-have

6. User Stories & Acceptance Criteria

Personas and User Stories

Amina, 28, Urban Consumer

I want to browse affordable food with filters and nutrition tags so I can choose healthy options within my budget, receive an AI-generated balanced basket within my budget so I can quickly select a nutritionally complete set of foods and I want the AI chatbot to guide me through the app so I can navigate easily as a first-time user.

Tunde, 40, Smallholder Farmer

I want to list my surplus produce with price and quantity so I can reach more buyers and reduce post-harvest losses, view demand trends and forecast insights so I can plan production and sales better.

Chinwe, 35, Food Vendor

I want to register, list surplus food, and track sales so I can manage my inventory and business performance.

Grace, 30, Platform Administrator

I want to be able to approve users, monitor listings, and access system analytics so I can maintain platform quality and compliance.

Acceptance Criteria

a. Users can filter food listings by price, location, and food type.
b. Nutrition tags are visible for all listings to support informed choices.
c. AI-generated baskets are within the user's budget and nutritionally balanced. Users can adjust selections before checkout.

d. The system provides AI-powered personalized food recommendations based on user preferences, browsing behavior, purchase history, and available marketplace listings.
e. Farmers and vendors receive AI-generated demand forecasts in their dashboards based on historical sales data, seasonal trends, and real-time marketplace activity.
f. Farmers receive AI-driven insights highlighting high-demand products and suggested pricing adjustments to reduce unsold inventory.
g. The AI chatbot responds to FAQs and provides step-by-step guidance for onboarding and navigation.
h. Users receive timely notifications for new messages, listing changes, and AI basket recommendations.
i. All login, sensitive actions, and transactions are secured using standard authentication methods
j. Delivery and logistics tracking should be visible for relevant orders, showing real time status, location, and estimated arrival time.
k. Farmers can create, edit, and delete listings with accurate price, quantity, and delivery details.
l. Farmers can access demand trends, historical sales data, and forecast insights in their dashboard.
m. Vendors can register, upload listings, track sales, and monitor inventory in real time.
n. Admins can approve or reject new users, moderate listings, view analytics dashboards, and generate reports.

7. Market Research & Competitive Insights

Category	Insight Summary	Key Metric / Example
Market Size	Growing AgriTech and food distribution market in Africa, driven by demand for affordable, nutritious food.	Estimated market size: USD 2.5 billion (2024)
Digital Adoption	Increasing use of mobile platforms for food distribution and payments.	+20% YoY growth in mobile transactions (2023)
Customer Pain Point	Challenges such as high food prices and limited access to fresh produce.	65% of consumers report difficulty in accessing affordable, nutritious food.

Category	Insight Summary	Key Metric / Example
Target Segments	Primary users include low-income households, small-scale farmers, and local vendors.	3 key personas: Urban consumers, smallholder farmers, and food vendors.
Competitive Gap	Lack of integrated platforms that connect farmers directly with consumers.	No major competitors offering AI-driven recommendations and nutrition tagging.
ChakulaKonnect Opportunity	Leverage AI and direct marketplace access to bridge gaps.	Unique first-mover advantage in integrating AI-driven nutrition and demand forecasting.

8. Success Metrics

a. **Monthly Active Users (MAU):**
We aim for a 20% increase in monthly active users within the first 12 months. This will be tracked through our platform analytics, ensuring that we're growing our user base effectively.

b. **Reduction in Surplus Waste:**
Our goal is to achieve a 20–25% reduction in post-harvest food waste among participating farmers within the first year. This will be measured by comparing surplus food data before and after using the platform.

c. **Increase in Farmer Revenue:**
We target a 15–20% increase in the average monthly sales of participating farmers within 12 months. Revenue growth will be tracked using the farmer dashboards and platform transaction data.

d. **AI Recommendation Usage Rate:**
We aim for 60% of active users to engage with AI-generated balanced food baskets within the first 6 months. Usage will be measured through analytics tracking interactions with AI suggestions, basket additions, and purchases.

e. **Vendor Onboarding Rate:**
Our goal is to onboard 70% of targeted vendors and have them actively listing surplus food within the first 12 months. This will be monitored via vendor registration and listing activity data.

f. **Delivery & Logistics Effectiveness:**
We aim for 85% of orders to be delivered on time within the first 6 months post-launch. Delivery success will be tracked using integrated logistics tracking and partner delivery data.

g. **User Satisfaction:**
We target a user satisfaction rate of at least 80% within the first 6 months. Satisfaction will be measured through post-purchase surveys, app ratings, and feedback forms.

9. Assumptions & Dependencies

Assumptions
    a. Consumers and vendors will adopt the platform if the benefits of reduced waste, better prices, and AI recommendations are clear.
    b. Farmers and vendors will provide accurate listing data, including price, quantity, expiration, and nutrition information.
    c. Users have access to internet-enabled smartphones or USSD-compatible devices in target regions.
    d. AI recommendations for balanced food baskets and demand forecasts are relevant and actionable for users.
    e. Third-party logistics partners will reliably deliver and track orders.

Dependencies
    a. Integration with payment gateways and mobile money platforms for seamless transactions.
    b. Real-time access to vendor and farmer listings for accurate marketplace operations.
    c. Third-party logistics APIs for delivery tracking and notifications.
    d. Compliance with local food safety regulations, data privacy laws, and financial transaction regulations.
    e. Cloud infrastructure capable of supporting AI computations, user dashboards, and platform scaling.

10. Out of Scope (MVP)

a. The platform will not provide medical-grade or personalized nutrition advice.
b. Managing an in-house delivery fleet is excluded; third-party logistics will be used.
c. Cross-border food trade and logistics are not part of the MVP.
d. Financial lending or credit services for farmers, vendors, or consumers are not included.
e. Advanced supply chain analytics for policymakers or NGOs are out of scope.
f. Real-time market pricing for secondary users like NGOs or policymakers will not be provided.
g. Vendor loyalty, rewards, or gamified incentive programs are excluded from the MVP.

11. Risks & Mitigation
a. Low adoption – Partner with cooperatives
b. Data inaccuracies – Regular validation
c. Logistics challenges – Partner with reliable third-party delivery businesses with tracking systems.
d. Regulatory issues – Compliance with food safety laws
e. Data Privacy and Security: Implement encryption, compliance with privacy laws, and regular security audits.
f. Market Adoption: Offer training programs and incentives to encourage farmer, consumer and vendor participation.
g. Quality Control: Implement verification systems and collaborate with food safety authorities.

h. AI Recommendations: Continuously update AI with local data and feedback.
i. Scalability: Use cloud-based infrastructure with auto-scaling.
j. Economic Viability: Ensure fair pricing and transparent fee structures.
k. Cultural Diversity: Customize platform features for regional needs.
l. Fraud Prevention: Implement verification and monitoring systems.
m. Regulatory Compliance: Maintain an adaptable compliance framework.

12. Implementation Roadmap
a. **Phase 1: Research & UX Design**
  a. Product Managers: Define project scope and goals, coordinate research activities.
  b. Product Designers: Conduct user research, create wireframes and prototypes.
  c. Data Analysts: Analyze user data to identify needs and trends.
  d. Data Scientists: Provide insights into data patterns that inform design.
b. **Phase 2: MVP Development**
  a. Product Managers: Oversee development progress, ensure alignment with goals.
  b. Product Designers: Work with developers to implement UI/UX designs.
  c. Front-End Developers: Code the user interface, ensuring responsiveness.
  d. Back-End Developers: Develop the server-side logic and APIs.
  e. Data Analysts: Monitor data flow and user interactions.
  f. Data Scientists: Integrate AI models and validate their performance.

c. **Phase 3: Pilot Launch**
  a. Product Managers: Coordinate pilot activities, gather feedback.
  b. Product Designers: Adjust designs based on pilot user feedback.
  c. Front-End & Back-End Developers**:** Fix bugs and optimize performance.
  d. Data Analysts: Analyze pilot data to gauge success.
  e. Data Scientists: Refine AI models based on pilot results.
d. **Phase 4: Optimization & Scaling**
  a. Product Managers: Plan for broader launch and scaling.
  b. Product Designers: Enhance UI/UX for a larger audience.
  c. Front-End & Back-End Developers: Scale infrastructure and optimized performance
  d. Data Analysts: Continue monitoring and reporting on metrics.
  e. Data Scientists: Ensure AI models remain accurate and effective as the user base grows.

12. Expected Business Impact
a. Improved access to nutritious food
b. Increased farmer income stability
c. Reduced food waste
d. Scalable food systems platform aligned with SDG 2