Technology and Circular Economy-Based Data-Driven Integrated Solution Platform for Agricultural Supply Chain and Commodity Trading

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OBJECTIVE

To develop and evaluate a data-driven integrated solution platform that leverages technology to enhance the circular economy within the agricultural supply chain and agricultural commodity trading, aiming to optimise resource utilisation, reduce waste, ensure traceability, time, and cost efficiency, and ensure a win-win situation among all agricultural supply chain stakeholders and improve sustainability and scalability throughout the entire value chain.

Also to enhance sustainable and scalable agribusiness for small marginal farmers, which ensures a better price with income increase and provides a salvage value for their damaged products through a circular economy mechanism, and to develop data-driven procurement and demand distribution and integrated logistics support for agricultural commodity traders to reduce their operational expenditure and procurement cost.

Objective	Focus Areas
Objective 1	- Circular Economy Enhancement - Resource Utilization Optimization - Waste Reduction - Traceability Improvement - Time and Cost Efficiency - Stakeholder Alignment - Sustainability and Scalability
Objective 2	- Sustainable and Scalable Agribusiness for Small Marginal Farmers - Price Improvement and Income Increase - Salvage Value Mechanism - Circular Economy Implementation
Objective 3	- Data-Driven Procurement and Demand Distribution - Integrated Logistics Support - Operational Expenditure Reduction - Procurement Cost Reduction

METHOD

In this MVP we will be using a combination of research methods:
Literature Review: A comprehensive review of existing literature related to circular economy principles, technology integration in agriculture, and supply chain optimization. This will help in understanding the current state of the field and identifying gaps and opportunities.
Data Collection: Gathering data from various sources, including agricultural supply chain stakeholders, small marginal farmers, and agricultural commodity traders. This will include data on production, transportation, procurement, and demand patterns.
Data Analysis: Employing data analytics and machine learning techniques to process and analyze the collected data. This analysis will help in identifying inefficiencies, waste, and areas for improvement within the supply chain..

Technology Development: Develop the integrated solution platform using advanced data analytics, IoT, and blockchain technologies to optimize resource utilization, improve traceability, reduce waste, and enhance overall efficiency.

Pilot Implementation: Deploy the solution in a real-world agricultural supply chain scenario, ensuring it addresses the specific needs and challenges of the stakeholders involved.

Sustainability Assessment: Assessing the long-term sustainability and scalability of the circular economy mechanism and its impact on small marginal farmers' income and damaged product salvage value.

Logistics Optimization: Developing data-driven procurement and demand distribution models and integrated logistics support for agricultural commodity traders to reduce their operational expenditure and procurement costs.

Feedback Integration: Collecting feedback from all stakeholders involved and using it to make necessary adjustments and improvements to the platform.
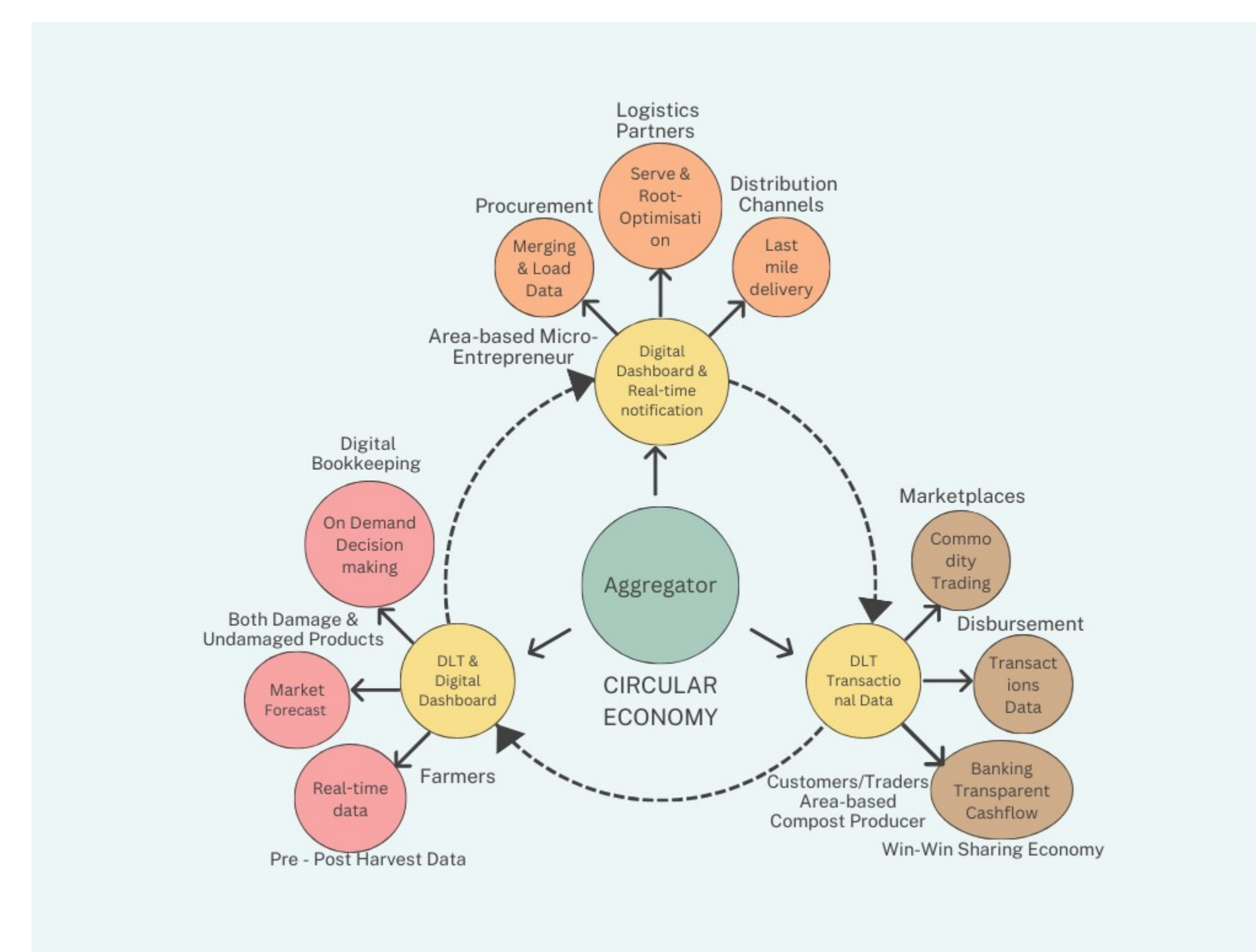
Data-Driven Circular Economy-Based Model: Connection Ledger with Flow Chart
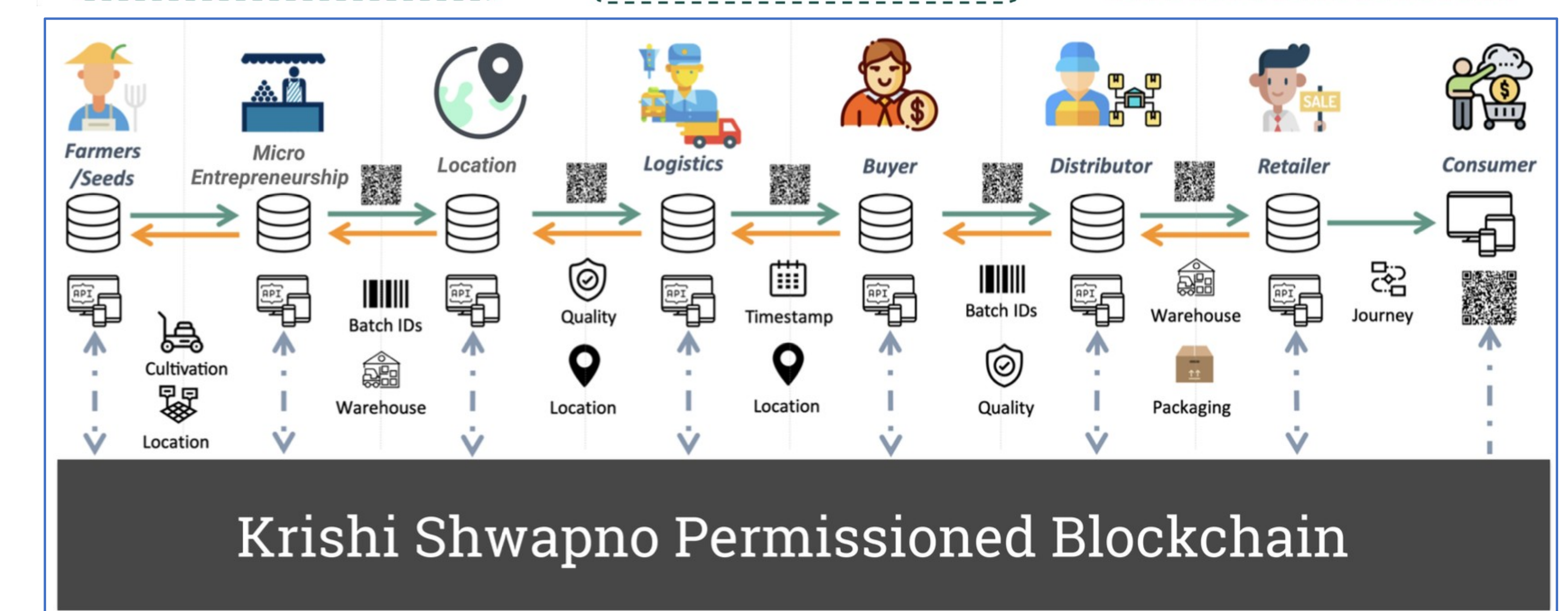
RESULTS

After joining our network farmers income is increasing by 10-15%. We collect both damage and undamaged products and Farmers also get a salvage value for their damage products and we serve those damage agri products to area based compost producer by our area based agent thats why its called circular economy that ensure zero post harvest losses, our platform creating micro-entrepreneurs at rural areas as our agents and Agri commodity traders and Agri startup get data driven distribution supports that reduce their operational expenditure and procurement cost.
This platform effectively leveraged technology to enhance the circular economy by optimizing resource utilization, reducing waste, ensuring traceability, improving time and cost efficiency, and fostering a win-win situation among all stakeholders within the agricultural supply chain.

How It Works
Adding Value as an Aggregator between Farmers to direkt marketplace with logistics

Marketplace Booked by Agent
Phase 1: Farmers Booked the Marketplace by Our Agent through our system dashboard

Merge Matching Distributions
Phase 2: Area based Logistics(Transportation) get notify by our agents to serve farmers products

Market Linkage & Trading
Phase 3: Proper Distribution to marketplace for Trading by Bulk Traders

Krishi Shwapno Permissioned Blockchain

IMPLICATIONS

Sustainability in Agriculture: The research will have implications for the broader field of sustainable agriculture by demonstrating how data-driven technology solutions can enhance resource utilization, reduce waste, and improve sustainability, thereby contributing to more environmentally friendly and efficient agricultural practices.

Economic Impact for Small Marginal Farmers: The research will potentially empower small marginal farmers by increasing their income through better prices and salvage value for damaged products. This may serve as a model for alleviating poverty and enhancing livelihoods in rural agricultural communities.

Circular Economy Adoption: The study will contribute to the adoption of circular economy principles in the agricultural sector, promoting the responsible use of resources, reducing waste, and ensuring the continuous circulation of materials and products within the supply chain.

Scalability: Successful implementation of the platform will provide insights into how circular economy solutions can be scaled up in agriculture and potentially across other industries, improving sustainability and scalability.

Current status/tractions with benefits and impacts

Small Marginal Farmers & Regions | Commodity Trading Marketplaces | Area-based Agents & Logistic Partners

Farmers 12000+ Covered Regions 15 | Farmers Trained Up 2000+ | Marketplace Covered 20+ | Agents 44 Logistics Partners 30

Our platform generating a Positive Impact to improve Socio-Economic condition on 200+ families' lives.
Farmer's Training Regarding: Cost-Benefit Analysis, Regenerative & Climate Resilience Farming Practices

Farmer Benefits
Income Increase also Get a value for Damage Products & Zero Waste
Within 24 Hours Quick Payment with area based sharing logistics supports

Rural Community Benefits
Create Rural both Men & Women Employment as an Agent
Improve Socio-economic conditions

Trader/Customer Benefits
Reduce sourcing cost, Time efficient Demand Driven Distribution supports for both Traders & Agri Start-ups

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